2013
ANNUAL MONITORING NETWORK PLAN

SACRAMENTO METROPOLITAN
AIR QUALITY MANAGEMENT DISTRICT

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Table of Content

List of Tables

List of Figures

List of Abbreviations and Acronyms

AADT	Annual average daily traffic
AGL	Above ground level
AIR	Sacramento-Airport Road Air Monitoring Site
ANP	Annual network plan
ARM	Approved Regional Monitor
AQS	Air Quality System
BAM	Beta Attenuation Monitor
BC	Sacramento-Branch Center #2 Air Monitoring Site
BL	General/Background
BRU	Elk Grove-Bruceville Air Monitoring Site
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CSN	Chemical Speciation Network
CFR	Code of Federal Regulations
CO	Carbon Monoxide
DPM	Sacramento-Del Paso Manor Air Monitoring Site
ECW	Sacramento-El Camino/Watt Air Monitoring Site
EPA	U.S Environmental Protection Agency
ER	Emission ratio
ERG	Eastern Research Group, Inc.
FE AADT	Fleet equivalent annual average daily traffic
FEM	Federal Equivalent Method
FID	Flame Ionization Detector
FOL	Folsom-Natoma Air Monitoring Site
FRM	Federal Reference Method
GC	Gas Chromatography
GOL	Sacramento-Goldenland Court Air Monitoring Site
HC	Highest Concentration
IM	Source Impact
MET	Meteorological sensor
MI	Microscale
MS	Middle Scale
MSA	Metropolitan Statistical Area
NAAQS	National Ambient Air Quality Standard
NCORE	National Core, a multi-pollutant ambient monitoring network
NDIR	Non-dispersive Infrared Spectrometry

NH	North Highlands-Blackfoot Air Monitoring Site
NMHC	Non-Methane Hydrocarbon
NO2	Nitrogen Dioxide
NOX	Oxides of Nitrogen
NOY	Reactive Oxides of Nitrogen
NPAP	National Performance Audit Program (Criteria pollutant monitors)
NPEP	National Performance Evaluation Program (PM2.5 FRM)
NS	Neighborhood Scale
O3	Ozone
PAMS	Photochemical Assessment Monitoring Sites
Pb	Lead
PEP	Performance Evaluation Program (PM2.5 FRM)
PM	Particulate Matter
PM2.5	Particulate Matter 2.5 micron
PM10	Particulate Matter 10 micron
PM-Coarse	Particulate Matter > 2.5 micron and < 10 micron (PM10-2.5)
POC	Parameter occurrence code
PPB	Parts per Billion
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QMP	Quality Management Plan
RC	Representative Concentration
RH	Relative Humidity
RS	Rancho Seco monitoring site
RTI	Research Triangle Institute
SASS	PM2.5 Speciation sampler
SCK	Sacramento Health Department-Stockton Blvd. Air Monitoring Site
SFNA	Sacramento Federal Nonattainment Area
SIP	State Implementation Program
SJV	San Joaquin Valley
SLAMS	State and Local Air Monitoring Sites
SLU	Sloughhouse Air Monitoring Site
SMAQMD	Sacramento Metropolitan Air Quality Management District
SO2	Sulfur Dioxide
SO4	Sulfate
SPM	Special Purpose Monitoring
SRD	Solar Radiation
SSI	Size Selective Inlet (PM10 FRM sampler)
STN	Speciation Trends Network
TAPI	Teledyne Advanced Pollution Instrumentation
TCCR	Transportation Corridor Concept Report

TEI	Thermo Environmental Instruments
TEOM	Tapered Element Oscillating Microbalance
THC	Total Hydrocarbon
TNMHC	Total Non-methane hydrocarbon
TST	Sacramento-T Street Air Monitoring Site
US	Urban Scale
UV	Ultraviolet
VCAPCD	Ventura County Air Pollution Control District
VOC	Volatile Organic Compounds
VSCC	Very Sharp Cut Cyclone
WD	Wind Direction
WF	Welfare Based
WS	Wind Speed

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Section 1. Introduction

State and Local agencies that conduct ambient air monitoring for regulatory purposes are required, by Title 40, Code of Federal Regulations, Part 58.10, to submit an Annual Monitoring Network Plan to the U.S. Environmental Protection Agency (EPA), no later than July 1st, each year. The report must contain specific monitoring network information and the report must be presented for a 30-day public review period prior to submittal to EPA. This report covers the period: January 1, 2012-December 31, 2012.

The primary purpose of this ambient air monitoring network report is to document the existing Sacramento County State and Local Air Monitoring sites (SLAMS), National Core (NCore) multi-pollutant monitoring stations, Chemical Speciation Network (CSN), Special Purpose Monitoring (SPM), and Photochemical Assessment Monitoring (PAMS) sites, operated by our District and California Air Resources Board (CARB), and to show that the ambient air monitoring network meets the requirements of 40 CFR 58, including Appendix A, C, D, and E, where applicable. The report will include the Federal Reference Method (FRM), Federal Equivalent Method (FEM), and Approved Regional Method (ARM) monitors. This report also discusses additional SPM monitoring instrumentation being operated, such as Aethalometers and Nephelometers, and surface/upper air meteorological sensors required for the PAMS program. The secondary purpose of this report is to discuss proposed changes (additions, relocations, and terminations of non-SPM monitors) in the ambient air monitoring network that may be proposed to occur within an 18 month period following submittal of this report.

This report is not an "in depth" analysis of the local air monitoring network design. An in-depth analysis of the monitoring network is required every 5 years to determine, at a minimum, if the network meets the monitoring objectives defined in 40 CFR Part 58 Appendix D, whether new sites are needed, whether existing sites are no longer needed, and whether new technologies are appropriate for incorporation in to the ambient air monitoring network.

This network plan focuses on the monitors that are operated within Sacramento County, which is a part of Sacramento-Arden Arcade-Roseville Metropolitan Statistical Area (MSA). For details on monitors in neighboring counties within the MSA, please refer to the latest California Air Annual Monitoring Network Report for Small District in California <http://www.arb.ca.gov/aqd/amnr/amnr2012.pdf>.

Section 2. Network Operations

Sacramento County is located in the middle of California's Central Valley and at the southern end of the Sacramento Valley. Sacramento County is the most populous part of the Sacramento-Arden Arcade-Roseville, California, MSA (Sacramento MSA). The Sacramento MSA also includes the western sections of Placer and El Dorado County, Yolo County, and parts of Solano and Sutter Counties. According to the latest U.S. Census estimates, Sacramento MSA is the 25th largest MSA in the U.S. by population. It has 2.2 million people, of which 1.4 million of those reside in Sacramento County. Figure 2-1 shows a map of Sacramento MSA.

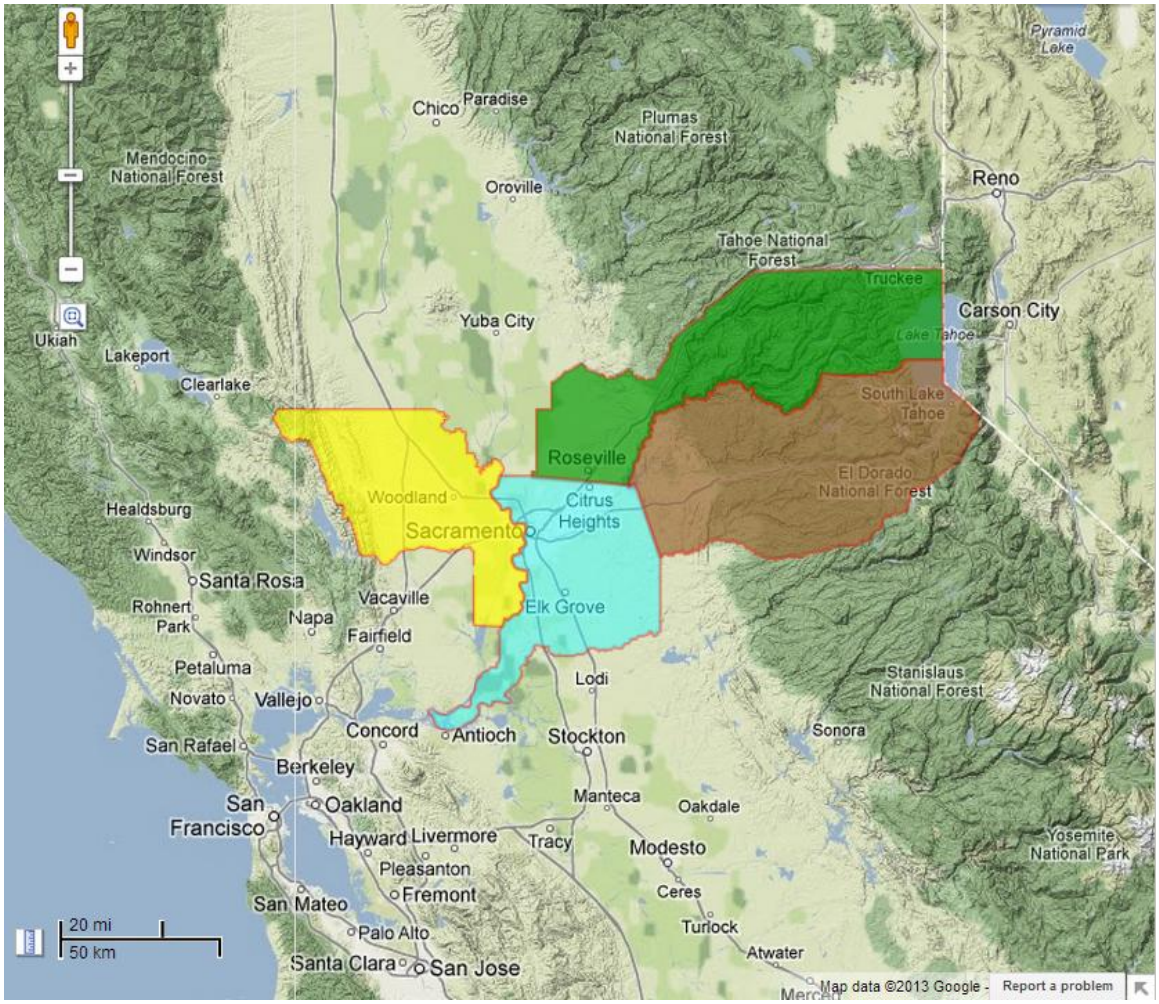
The Sacramento MSA is a non-attainment area for the Federal 8hr O_3 standard and is referred to as Sacramento Federal Nonattainment Area (SFNA). The area is shown in Figure 2-2. While Sacramento is designated as a federal non-attainment area for PM_{10} and 24-hr $PM_{2.5}$, it has met both standards and is currently working with EPA to re-designate the attainment status. Sacramento County is in attainment for the Federal CO, NO_2, and SO_2 standards. The California Air Resources Board recommended that EPA designate Sacramento County as unclassified for the 2008 Federal Pb standard.

SMAQMD operates ten air monitoring sites within Sacramento County. While most sites operate a suite of instruments to monitor multiple pollutants and meteorological condition, only a few sites monitor a specific pollutant. Each site has monitors that belong to one or more national monitoring networks, such as SLAMS, PAMS, NCore and CSN, or is an SPM. In addition to SLAMS and PAMS, SMAQMD operates one of the 80 NCore sites and one of the 54 $PM_{2.5}$ CSN trend sites. Figure 2-3 shows the location of these monitoring sites, which includes one site that is operated by ARB: Sacramento-T Street. Table 2-1 lists the type of monitoring network each site belongs to and the pollutants monitored at each site.

The primary focus of the current ambient air monitoring network is the collection of O_3 and photochemical pollutant precursors such as NO_X and VOC, and $PM_{2.5}$ data to support SIP development, attainment/non-attainment decisions, public notification, and data for air quality modeling efforts. The network is designed to meet three basic monitoring objectives: (1) provide air pollution data to the general public in a timely manner; (2) support compliance with ambient quality standards and emissions strategy development; and (3) support air pollution research studies. To support these monitoring objectives there are a variety of types of monitoring sites including sites located to determine the highest pollutant concentration, the representative concentrations in areas of high population density, the impact of major pollution emissions sources, the general background concentration levels, the extent of pollutant transport, and impacts on visibility, vegetation, and other welfare-based impacts. An overview of monitoring objective is in Table 2-2.

The physical siting of an air monitoring station must achieve a spatial scale of representativeness that is consistent with the monitoring objective of the monitor. The spatial scale results from the physical location of the site with respect to the pollutant sources. It estimates the size of the area surrounding the monitoring site that experiences uniform pollutant concentrations. Table 2-3 summarizes the site type and spatial scale. For in-depth details on individual monitors, including monitoring objective and statement of purpose, see Appendix B, Detailed Site Information. Site type and spatial scale description can be found in Appendix D to 40 CFR 58.

Figure 2-1
Counties within Sacramento-Arden Arcade-Roseville, California, MSA



PARTIAL SCREENSHOT OF GOOGLE MAP

- El Dorado
- Placer
- Sacramento
- Yolo

Figure 2-2
Sacramento Non-attainment Area

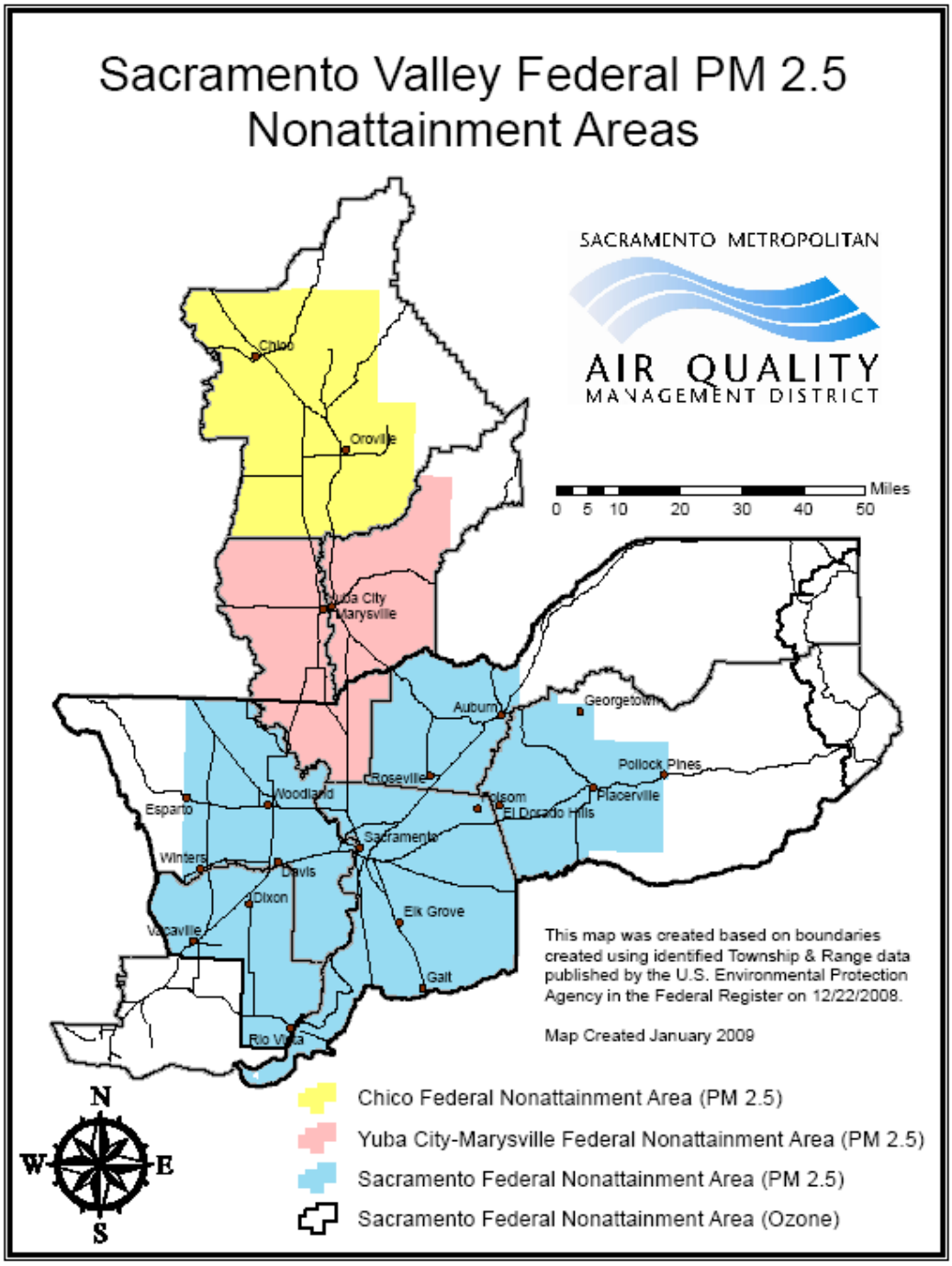
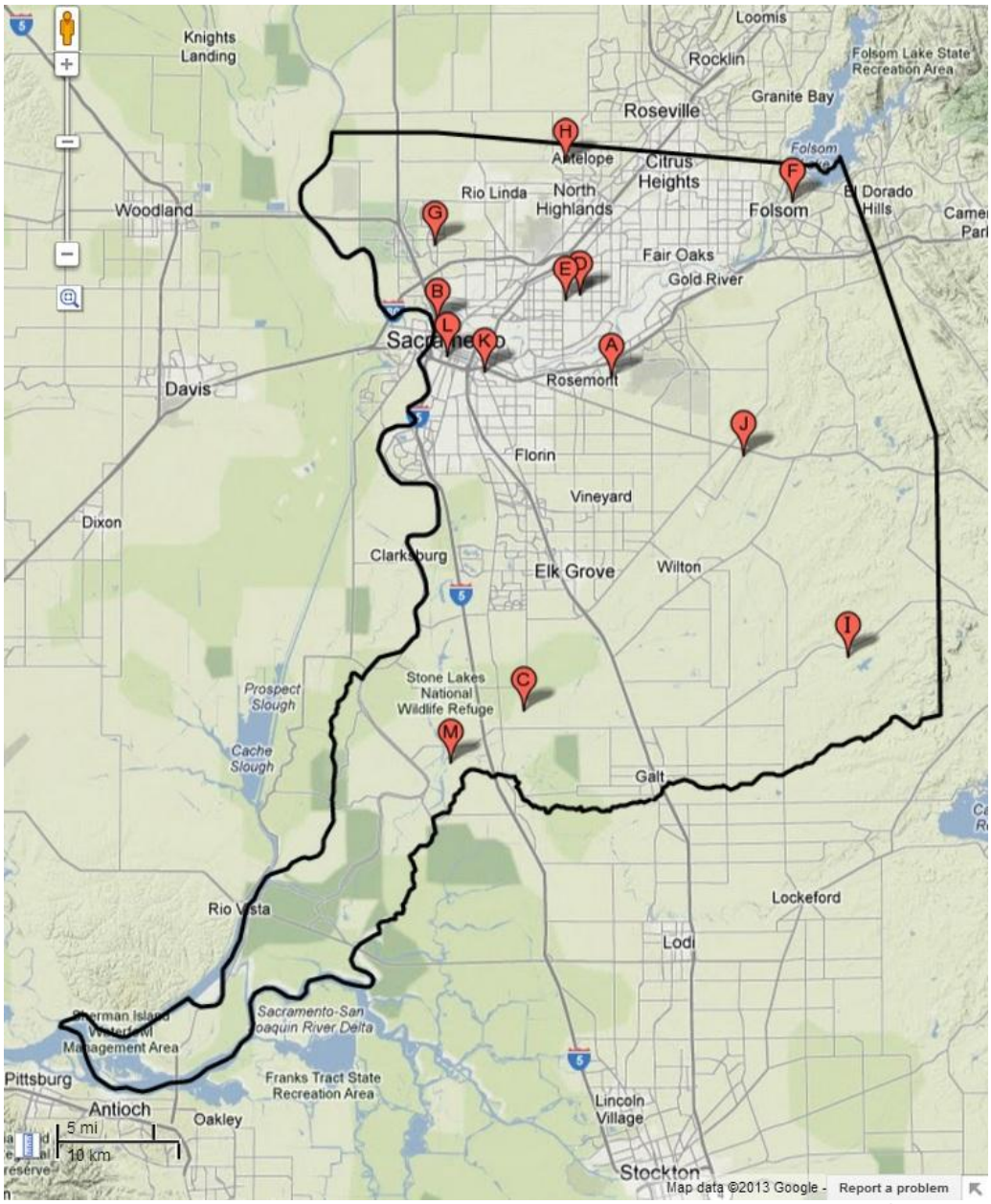


Figure 2-3
Air Monitoring Sites in Sacramento County



PARTIAL SCREENSHOT OF GOOGLE MAP

A. Sacramento-Branch Center Rd #2
B. *Proposed Monitoring Site*[1]
C. Elk Grove-Bruceville Rd
D. Sacramento-Del Paso Manor
E. Sacramento-El Camino Watt
F. Folsom-Natoma St
G. Sacramento-Goldenland Ct.
H. North Highlands-Blackfoot Way
I. Rancho Seco
J. Sloughhouse
K. Sacramento-Health Dept.
L. Sacramento-T Street (operated by CARB)
M. Walnut Grove Tower (Monitors ozone and meteorology aloft)

[1] Proposed site is the near-road site to be operational by 1/1/14, see Section 4

Table 2-1
Purpose and Overview of Pollutants Monitored

		Sacramento-Branch Center Rd #2 (BC)	Proposed Monitoring Site (BER)	Elk Grove-Bruceville Rd (BRU)	Sacramento-Del Paso Manor (DPM)	Sacramento-El Camino/Watt (ECW)	Folsom-Natoma St (FOL)	North Highlands-Blackfoot Way (NH)	Sacramento-Goldenland Ct (GOL)	Rancho Seco (RS)	Sloughhouse (SLU)	Sacramento-Health Dept. (STK)	Sacramento-T St (TST)
Purpose	SLAMS	×	×	×	×	×	×	×	×		×	×	×
	PAMS			×	×		×	×					
	CSN				×								×
	NCORE				×								
	SPM				×				×	×	×		
Pollutants	Ozone (O_3)			×	×		×	×	×		×		×
	Carbon Monoxide (CO)		×		×	×		×	×				
	Nitrogen Dioxide (NO_2)		×	×	×		×	×	×				×
	Total Reactive Nitrogen (NO_Y)				×		×						
	Sulfur Dioxide (SO_2)				×								
	Non-methane Hydrocarbon (NMH)			×	×		×	×					
	Speciated VOC			×	×		×						
	Carbonyl				×								
	PM_{10} (Hourly, continuous)	×			×			×	×			×	
	PM_{10} (24-hr)							×				×	×
	$PM_{2.5}$ (Hourly, continuous)			×	×		×			×	×		×
	$PM_{2.5}$ (24-hr)		×		×							×	×
	Speciated $PM_{2.5}$				×								×
	$PM_{10-2.5}$ (24-hr)				×								
	Lead (Pb)				×								
	Black Carbon (BC)		×		×								
	Scattering Coefficient				×								
Meteorology	Outdoor Temperature		×	×	×		×	×			×		×
	Relative Humidity		×	×	×		×	×					×
	Wind Direction		×	×	×		×	×			×		×
	Wind Speed		×	×	×		×	×			×		×
	Solar Radiation			×	×		×	×					
	Ultraviolet Radiation			×									
	Barometric Pressure			×									×
	Precipitation			×									
	Upper Level Meteorology			×									

Table 2-2
Monitoring Objective

	Sacramento-Branch Center Rd #2 (BC)	Proposed Monitoring Site (BER)	Elk Grove-Bruceville Rd (BRU)	Sacramento-Del Paso Manor (DPM)	Sacramento-El Camino/Watt (ECW)	Folsom-Natoma St (FOL)	Sacramento-Goldenland Ct (GOL)	North Highlands-Blackfoot Way (NH)	Rancho Seco (RS)	Sloughhouse (SLU)	Sacramento-Health Dept. (STK)	Sacramento-T St (TST)
O_3			N,P	N,P		N,P	N,P	N,R		N,P		N,P
CO		N,P		N,P	N,P		N,P	N,R				
NO_2		N,P	N,P	N,P		N,P	N,P	N,R				N,P
NO_Y				P		P						
SO_2				N,P								
NMH			P,R	P,R		P,R	P,R					
VOC			R	R		R						
PM_{10} (Hourly)							P				P	
PM_{10} (24-hr)	N,P			N,P			N,P	N,P			N,P	N,P
$PM_{2.5}$ (Hourly)			P	P		P			R	R		P
$PM_{2.5}$ (24-hr)		N,P		N,P							N,P	N,P
$PM_{10-2.5}$				P								
Pb				N,P								

Legend:

N - NAAQS Comparison
P - Public Info
R - Research

Table 2-3
Type of Site and Spatial Scale

		Sacramento-Branch Center Rd #2 (BC)	Proposed Monitoring Site (BER)	Elk Grove-Bruceville Rd (BRU)	Sacramento-Del Paso Manor (DPM)	Sacramento-El Camino/Watt (ECW)	Folsom-Natoma St (FOL)	Sacramento-Goldenland Ct (GOL)	North Highlands-Blackfoot Way (NH)	Rancho Seco (RS)	Sloughhouse (SLU)	Sacramento-Health Dept. (STK)	Sacramento-T St (TST)
Site Type	Ozone			UP	PE		MO PE	PE	PE		MO		PE
	Carbon Monoxide		SO		PE	HC		PE	PE				
	Nitrogen Dioxide		SO	UP	PE		HC	PE	PE				PE
	Sulfur Dioxide				PE								
	PM_{10} (Cont. or Manual)	HC			PE			PE	PE			PE	PE
	$PM_{2.5}$ (Cont. or Manual)			BG	PE HC		PE			BG	UP	PE HC	PE HC
	$PM_{10-2.5}$				PE								
	Lead				BG								
Spatial Scale	Ozone			US	NS		NS	US	US		NS		US
	Carbon Monoxide		MC		NS	MC		NS	NS				
	Nitrogen Dioxide		MC	NS	NS		NS	NS	NS				MD
	Sulfur Dioxide				US								
	PM10 (Cont. or Manual)	NS			NS			NS	NS			NS	NS
	PM2.5 (Cont. or Manual)			NS	NS		NS			NS	NS	NS	NS
	$PM_{10-2.5}$				NS								
	Lead				US								

Legend:

Site Type:

- BG - General/Background
- ED - Extreme Downwind
- HC - Highest Concentration
- MO - Max O_3 Concentration
- MP - Max Precursor Emissions
- OT - Other
- PE - Population Exposure
- QA - Quality Assurance
- RT - Regional Transport
- SO - Source Oriented
- UP - Upwind Background
- WF - Welfare Related Impacts

Spatial Scale:

- MC - Microscale
- MD - Middle Scale
- NS - Neighborhood Scale
- RS - Regional Scale
- US - Urban Scale

Section 3. Minimum Monitoring Requirements

Depending on the specific pollutant, the minimum number of monitors required for each pollutant is based on the one or more applicable factors as described in Appendix D to 40 CFR 58: MSA population, pollutant design value, pollutant maximum concentration, attainment status, annual average daily traffic (AADT), state implantation plan (SIP), maintenance plan, population weighted emission index (PWEI), and EPA's national emission inventory (NEI) data.

Sacramento MSA meets or exceeds minimum monitoring requirement for all criteria pollutants – O_3, $PM_{2.5}$ (manual and continuous methods), PM_{10}, NO_2, SO_2, CO, and Pb. Details of the minimum monitoring requirements of all criteria pollutants are provided in tables 3-1 and 3-2. Monitors in these tables represent Sacramento MSA (or CBSA, ID#40900). As mentioned in Section 2, Sacramento MSA has 2.2 million residents (U.S. Census, 2010) and is composed of El Dorado, Placer, Sacramento, and Yolo Counties.

In addition to the criteria pollutants, Sacramento MSA also meets minimum monitoring requirement for PAMS, which is required due to the severity of ozone non-attainment classification in Sacramento MSA. Currently, there is one of each PAMS type I, II, and III sites. There is also a secondary type II site. Table 3-3 lists the instruments operating at each PAMS.

Furthermore, all instruments operated by SMAQMD meets operating schedule requirement as specified in 40 CFR Part 58.12. As required, all continuous monitors reports hourly data. Sampling schedule for non-continuous monitors is summarized in Table 3-4. Design value is included in the table if it is needed to maintain a specific schedule, for non-continuous monitors. All monitors are operated year-round except VOC and carbonyl samplers at PAMS and special purpose $PM_{2.5}$ monitors at Sloughhouse and Rancho Seco. For details on sampling season and operating schedule, please refer to Appendix B.

Table 3-1
Sacramento MSA Design Value and Monitoring Requirement, Part 1

Pollutant	Type	2012 Design Value	Design Value Site (AIRS ID#)	# of Unique Monitors Required	# Active Monitors in MSA	# Active Monitors Sacramento County	# Additional Monitors Needed
O_3	8-hr	0.095 ppm	Folsom-Natoma St (06-067-0012)	2	17	7	0
$PM_{2.5}$	24-hr (FRM)	31 µg/m^3	Sacramento-Del Paso Manor (06-067-0006)	3	5	3	0
	Annual (FRM)	9.5 µg/m^3	Sacramento-Del Paso Manor (06-067-0006)				
	Continuous	N/A		2	9	4	0
PM_{10}		69 µg/m^3 (54% of NAAQS)	Sacramento-Branch Center #2 (06-067-0284)	2-4	10	6	0
$PM_{10-2.5}$		N/A	Located at Sacramento-Del Paso Manor (06-067-0006)	1	1	1	0

Table 3-2
Sacramento MSA Design Value and Monitoring Requirement, Part 2

Pollutant	Type	Notes:	# of Unique Monitors Required	# Active Monitors in Sacramento MSA	# Active Monitors in Sacramento County	# Additional Monitors Needed
NO_2	Near-road	Max annual average daily traffic count: 246,000 (2011, Caltrans) Near-road monitoring requirement will be satisfy by the Proposed Monitoring Site, see Appendix C NO_2 monitor at Sacramento-Del Paso Manor (06-067-0006) serves as both PAMS and area-wide monitor	1	0	0	1[A]
	Area-wide		1	8	6	0
SO_2		Total SO_2: 1,774 tons (NEI, 2008) Population Weighted Emission Index: 3,903 million persons-tons per year Monitor at Sacramento-Del Paso Manor satisfy NCore and SO_2 monitoring requirements	1	1	1	0
CO		Trace monitor at Sacramento-Del Paso Manor (06-067-0006) satisfy the NCore requirement, which also satisfy the 1 monitor requirement in the Maintenance Plan	2	4	4	1[A]
Pb	Non-source oriented	Pb monitor at Sacramento-Del Paso Manor (06-067-0006) satisfy the NCore requirement	1	1[B]	1	0
	Source oriented	No industrial source > 0.5 tpy, airport source < 1.0 tpy (NEI, 2008)	0	0	0	0

[A] Located at new near-road monitoring site, to be operational by 1/1/2014, as required by 40 CFR Part 58
[B] Another lead monitor is in operation at Roseville-N Sunrise Ave (06-067-0006) but does not count toward monitoring requirement because it is not a required site

Table 3-3
PAMS Minimum Monitoring Requirement

	# Required	# Active	Elk Grove-Bruceville Rd (Type I)	Sacramento-Del Paso Manor (Type II)	Sacramento-Goldenland Ct. (Type II, secondary)	Folsom-Natoma St (Type III)
O_3	4[A]	4	×	×	×	×
CO	1	2		×	×	
NO_X	2	4	×	×	×	×
NO_Y	1	1		×[B]		×
Speciated VOC	2	2		×		×
Carbonyl Sampling	1	1		×		
Surface Met	4[A]	4	×	×	×	×
Upper Air Meteorology	1	1	×			

[A] This requirement is dependent on the number of PAMS site, see Appendix D to 40 CFR 58
[B] Per Appendix D, this monitor does not count toward PAMS requirement but is required for NCore; NO_Y for PAMS must be at Type I or III site

Table 3-4
Sampling Schedule

	Sacramento-Branch Center Rd #2 (BC)	Proposed Monitoring Site (BER)	Elk Grove-Bruceville Rd (BRU)	Sacramento-Del Paso Manor (DPM)	Folsom-Natoma St (FOL)	Sacramento-Goldenland Ct (GOL)	North Highlands-Blackfoot Way (NH)	Sacramento-Health Dept. (STK)	Sacramento-T St (TST)
PM_{10} 24-hr	Max Conc: 60 µg/m^3			Max Conc: 41 µg/m^3		Max Conc: 32 µg/m^3	Max Conc: 34 µg/m^3	Max Conc: 34 µg/m^3	Max Conc: 36 µg/m^3
$PM_{2.5}$ 24-hr		DV: N/A		DV: 31 µg/m3[A]				DV: 31 µg/m3	DV: 31 µg/m3
$PM_{10-2.5}$ 24-hr				1 in 3					
Pb 24-hr				1 in 6					
VOC 3 hr			During O_3 episode only	1 in 3	1 in 3				

Note: The following sites are not included in this table because all of its monitors are operated continuous and reports hourly data - Sacramento-El Camino Watt, Sloughhouse, Rancho Seco

Yellow denotes
1 in 3 day sampling

Green denotes
1 in 6 day sampling

Pink denotes
1 in 12 day sampling

Section 4. Recent and Proposed Modification to the Network

This section discusses recent and proposed modification to the monitoring network. As required by 40 CFR Part 58.10, modifications within the next 18 months are included. While the District is not requesting approval for modification through this network plan, the modifications discussed in this plan include the following:

Sacramento-Bercut Dr. (Proposed Site)
Bercut Dr. is tentatively selected as the near-road monitoring site contingent on approval from the EPA. Final revision to ambient NO2 monitoring requirement (EPA Docket ID EPA-HQ-OAR-2012-0486) requires this site to be operational by January 1, 2014. Appendix C to this network plan discusses site selection criteria and the rationale to locate the near-road monitoring site at this location.

As per Appendix D to 40 CFR Part 58, this site will monitor the required pollutants – NO_2 and CO – as well as optional pollutants and meteorological parameters – black carbon, wind direction, wind speed, temperature, and relative humidity. In anticipation of the upcoming $PM_{2.5}$ near-road monitoring requirement, January 1, 2017 deadline for Sacramento CBSA per final rule of $PM_{2.5}$ NAAQS review (78 FR 3086), the District will also install a $PM_{2.5}$ monitor.

Appendix B lists the details such as site type and objective for planned instruments at this site.

Elk Grove-Bruceville Rd.
The District is considering to discontinue the speciated VOC measurement. Appendix D to 40 CFR Part 58 requires only two speciated VOC measurement sites per PAMS network area, and Sacramento-Del Paso Manor (type II PAMS) and Folsom-Natoma St. (type III PAMS) satisfy this requirement. Speciated VOC measurement collected at this site is insignificant due to its low, background concentration.

Sacramento-Del Paso Manor
The District installed a $PM_{2.5}$ FEM continuous monitor in September 2012 to replace the non-FEM monitor because the $PM_{2.5}$ 2011design value was within 95% of NAAQS. As allowed by 40 CFR 58.20, the FEM monitor was installed as a special purpose monitor (SPM). Comparability test concludes that the FEM is not comparable to a collocated FRM monitor due to seasonal variability. Specifically, the multiplicative bias was outside of acceptable limit during non-winter months (40 CFR Part 58.35 defines winter as “coolest three or four months of the year at the site”). The comparability test was performed in accordance to 40 CFR Part 58.35. In April 2013, the District relocated the $PM_{2.5}$ FEM monitor to Folsom-Natoma St, where the monitor will continue to operate as an SPM.

Throughout 2012 and 2013, the existing $PM_{2.5}$ FRM monitor remained the primary $PM_{2.5}$ sampler for comparison to the annual ambient air quality standard.

In December 2012, the FRM monitor's sampling frequency increased from 1 in 3 days to daily sampling to provide daily $PM_{2.5}$ data that is comparable to the NAAQS.

The District is evaluating to shut down the Nephelometer. The monitor was originally installed in 1999 for the California Regional Particulate Air Quality Study. After the study ended in 2001, the monitor was not removed and became a special purpose monitor.

Sacramento-El Camino/Watt
In September 2011, EPA approved the District's site termination request due to a street/sidewalk improvement project in 2012 that requires termination or relocation of this air monitoring station. The termination process was postponed, as the street/sidewalk project was delayed until April 2013. This site will be terminated in early 2013 when the project proceeds. A copy of the approval letter is attached in Appendix D.

Folsom-Natoma St
In April 2013, the $PM_{2.5}$ non-FEM continuous monitor was relocated to the Sloughhouse site and was replaced by a continuous FEM monitor. The FEM monitor will operate as an SPM while the District performs a data quality assessment. This special purpose monitor is not eligible for comparison to NAAQS because 40 CFR Part 58.20 allows SPM operating less than 24 months to be excluded from NAAQS comparison.

Sacramento-Goldenland Ct
The District is evaluating to terminate this site. Sacramento-Goldenland Ct. is a redundant secondary type II PAMS, as nearby Sacramento-Del Paso Manor is a primary type II PAMS that measures a full suite of VOC. Furthermore, preliminary analysis shows this site does not measure the highest concentration of criteria pollutants. If this site is terminated, there are still enough number of monitors within this CBSA to satisfy the monitoring requirement in Appendix D to 40 CFR Part 58.

North Highlands-Blackfoot Way
The District is considering to reorganize this site. North Highland-Blackfoot Way was originally sited to support a proposed power plant project at McClellan AFB, which was canceled during the early 1980s. The District is planning to request approval for termination of the PM_{10} SSI sampler. Also, the district is evaluating to adapt a seasonal sampling schedule for O_3 and CO. Staff resource used to support this air monitoring site would be reassigned to support the new NO_2 near roadway monitoring sites.

Sacramento Health Dept.-Stockton Blvd.
The District will submit a request for termination of the PM_{10} TEOM and PM_{10} SSI monitors. The TEOM monitor is not required, and its data is not used for forecasting or analysis due to its negative bias during the winter time when there is an abundance of wood combustion. The SSI monitor also is not required because there is a sufficient number of SSI monitors in Sacramento MSA to meet the minimum monitoring requirement.

Also, the District is considering to terminate the $PM_{2.5}$ FRM monitor. This monitor is redundant as it collects the same $PM_{2.5}$ data as the nearby Sacramento-T Street.

Sloughhouse
A non-FEM PM2.5 BAM monitor was relocated from Folsom-Natoma St. in April 2013. It replaces the existing PM2.5 E-BAM monitor.

Section 5. PM Collocation Requirement

Quality Assurance Requirements for SLAMS found in Appendix A to 40 CFR Part 58 requires collocation for PM_{10}, $PM_{2.5}$ FRM and FEM, and $PM_{10-2.5}$ monitors. Section 3 in the appendix states that each method within a "primary quality assurance organization (PQAO) must have 15 percent of the monitors collocated."

SMAQMD is a small air quality management district and does not maintain a PQAO. Collocated monitors operated by SMAQMD are part of the CARB PQAO. Currently, $PM_{2.5}$ FRM and PM_{10} FRM monitors at Sacramento-Del Paso Manor are collocated. For complete details on PM collocation, please refer to the Section 6, Required Quality Assurance of the Monitoring Program, in the Annual Monitoring Network Report for Small Districts in California dated June 2012 prepared by CARB (http://www.arb.ca.gov/aqd/amnr/smnetrpt12.pdf).

Section 6. Process to Review Changes to $PM_{2.5}$ Monitoring Network

40 CFR Part 58 requires that this Annual Monitoring Plan to "document how State and Local Agencies provide for the review of changes to a $PM_{2.5}$ monitoring network that impact the location of a violating $PM_{2.5}$ monitor or the creation/change to a community monitoring zone, including a description of the proposed use of spatial averaging for purposes of making comparisons to the annual $PM_{2.5}$ NAAQS as set forth in Appendix N to Part 58 in 40 CFR 58. The affected State or local agency must document the process for obtaining public comment and include any comments received through the public notification process within their submitted plan." Note that spatial averaging does not apply in California because the state and local air monitoring districts collectively elected not to establish community monitoring zone in the 1990s.

An informational comparison, not required by air monitoring regulation, on the number of $PM_{2.5}$ monitors by area and population has been included. The analysis can be found in Appendix A.

The general process for any proposed change to the monitoring network is that the proposed change is discussed in this Annual Monitoring Plan. Then, during spring, each year, this Annual Monitoring Plan will be sent by SMAQMD to CARB/TSD for review and comment. Prior to June 1, each year, this report will be posted to our District Website for no less than 30 days, for public review and comment. During late June, each year, the finalized Annual Monitoring Plan and comments on the Plan will be forwarded to EPA-Region IX, prior to the July 1 deadline.

Section 7. Data Submission Requirements

CARB submits precision, accuracy, and raw data for all District operated monitors in 2012. CARB is also the lead agency on annual data certification. The following submission dates are provided by CARB.

- 2012 Precision/Accuracy reports submitted to AQS: May 2013
- 2012 Annual data certification submitted: May 2013 (by CARB)

Section 8. Review of Existing SMAQMD Air Monitoring Sites

For each monitor at each monitoring site, the tables in Appendix B were used to determine if each monitor meets 40 CFR 58 requirements, including Appendix A (QA Requirements), C (FRM/FEM/ARM Requirements), D (Network Design Criteria), and E (Probe Sitting Criteria), when applicable. The SMAQMD ambient air monitoring network meets the requirements of 40 CFR 58 including Appendix A, C, D, and E.

Appendix A Comparison of number of $PM_{2.5}$ Monitors by area and population

The Sacramento MSA has a total of 16 PM2.5 monitors: 5 FRM, 9 BAM, and 2 SASS monitor. 8 of the 16 PM2.5 monitors are located in areas of high population density to monitor for population exposure.

To illustrate how the Sacramento MSA compares to other air districts in terms of monitoring PM2.5, a comparison of the number of PM2.5 monitors by geographic area and population in several air districts in California is shown in the table below.

Table A-1
Comparison of Number of PM2.5 Monitors

District	Square Miles	Population (millions)	Number of $PM_{2.5}$ Monitors	$PM_{2.5}$ Monitors per person	$PM_{2.5}$ Monitors per square mile
Bay Area	5,340	6.8	20	1 per 340,000	1 per 267
Sacramento MSA	5,309	2.1	16	1 per 131,350	1 per 332
South Coast	15,000	16.5	33	1 per 500,000	1 per 455
San Joaquin Valley	25,000	3.9	26	1 per 150,000	1 per 962

The numbers of PM2.5 monitors per person show that the Sacramento MSA has a higher than average number of monitors per person. The numbers of PM2.5 monitors per square mile show that the Sacramento MSA has a higher than average number of monitors per square mile.

However, caution should be used when doing these types of comparisons, as these four Districts have different ratios of urbanized area vs. rural areas and rural vs. urban population, etc. For example, Bay Area has a similar size (number of square miles) compared to the Sacramento MSA, but Bay Area has a higher population density per square mile, in the urbanized areas. San Joaquin Valley has a highest amount of area, more rural population, and lowest population density per square mile. In addition, San Joaquin Valley has the typical PM2.5 sources of motor vehicles and residential wood combustion, but it also has agricultural sources of PM2.5. Thus, the size of a monitoring network is largely determined by the number of monitors needed to satisfy the local/regional monitoring needs, depending upon the unique features and needs of that District.

Appendix B Detailed Site information

Detailed site information covered in this appendix reflects air monitoring operation from January 1, 2012-December 31, 2012.

B.1 Sacramento-Branch Center #2

Sacramento-Branch Center #2 is a PM10 SSI site. This site was established, in early 2006, to replace the former Sacramento-Branch Center site, which was approximately one-quarter mile to the north.

The objective of this site is to measure the representative concentration, as documented in the original site initiation reports filed in the late 1980s. The old site was relocated since nearby trees were a flow obstacle.

Site Name	Sacramento-Branch Center #2
AQS Site No.	06-067-0284
Geographic Coordinates	38.553611°, -121.336111° (NAD27)
Location	Rooftop of building in middle of County Maintenance Yard, located 10 miles east-southeast of downtown Sacramento.
Address	3847 Branch Center Road, Sacramento, CA 95827
County	Sacramento
Distance from roadway	40 m
Average Daily Traffic	26,274 (Bradshaw Road) Vehicles/Day (SACDOT, 2010)
Ground Cover	Paved
Representative Area (MSA)	Sacramento--Arden-Arcade--Roseville, CA

Site	Sacramento-Branch Center
Start Date	4/1/06
Collecting Agency	SMAQMD
Analytical Lab	SMAQMD
Reporting Agency	CARB
Pollutant	PM10
Parameter code	81102
POC	1
Instrument manufacturer and model	Sierra Anderson 1200
Sampling Method	Hi Volume
Sampling method code	063
Analysis Method	Gravimetric
FRM/FEM/ARM/Other	FRM
Comparable to annual PM2.5 NAAQS?	N/A
Monitoring objective	NAAQS comparison, public info
Statement of Purpose	Measures PM10 concentration
Monitor type	SLAMS
Site type	Highest concentration
Spatial scale	Neighborhood
Sampling Frequency	1 in 6 days
Sampling season	Year Round
Distance from supporting structure	1.7 m
Distance from obstructions on roof	N/A
Distance from obstructions not on roof	N/A
Distance from trees	30 m
Distance to furnace or incinerator flue	N/A
Distance between collocated monitors	N/A
Unrestricted airflow >= 270 deg arc	Yes
Probe height (agl)	6.2 m
Probe material	N/A
Residence time	N/A
Changes in the next 18 months?	No
Frequency of flow rate verification	Monthly
Last two semi-annual flow rate audit	4/23/12, 10/11/12

B.2 Sacramento-Bercut Dr

This is a proposed near-road monitoring site. Located one mile from Downtown Sacramento, this site is expected to measure the highest NO_2 concentration due to the emission from car and truck on Interstate 5, which is about 20 m from the site.

Site Name	Sacramento-Bercut
AQS Site No.	Unknown
Geographic Coordinates	38.593328°N, -121.503728°W
Location	On the downwind side of Interstate 5, one mile north-northwest of downtown Sacramento.
Address	Bercut Dr, Sacramento, CA
County	Sacramento
Distance from Roadway; Average Daily Traffic	Interstate 5: 20 m; 186,000 Vehicles/Day (Caltrans, 2011) Bercut Dr.: 3 m; unknown (representative count not available) Bercut Dr. & Bannon St.: 313 m; 2,709 (City of Sacramento, 2012)
Ground Cover	Pavement, with vegetation
Representative Area (MSA)	Sacramento--Arden-Arcade--Roseville, CA

Site	Sacramento-Bercut Dr	
Start Date	1/1/14	1/1/14
Collecting Agency	SMAQMD	SMAQMD
Analytical Lab	Not Applicable	Not Applicable
Reporting Agency	CARB	CARB
Pollutant	Nitrogen Dioxide	Carbon Monoxide
Parameter code	42602	42101
POC	1	1
Instrument manufacturer and model	TAPI200UP	TAPI 300EU
Sampling Method	#N/A	Instrumental
Sampling method code	Unknown	593
Analysis Method	Photolytic, Chemiluminescence	Gas Filter Correlation
FRM/FEM/ARM/Other	FEM	FRM
Comparable to annual PM2.5 NAAQS?	N/A	N/A
Monitoring objective	NAAQS comparison, public info	NAAQS comparison, public info
Statement of Purpose	Monitors near road emission	Monitors near road emission
Monitor type	SLAMS	SLAMS
Site type	Source Orientied	Source Orientied
Spatial scale	Microscale	Microscale
Sampling Frequency	Continuous	Continuous
Sampling season	Year Round	Year Round
Distance from supporting structure	N/A	N/A
Distance from obstructions on roof	N/A	N/A
Distance from obstructions not on roof	N/A	N/A
Distance from trees	Unknown	Unknown
Distance to furnace or incinerator flue	N/A	N/A
Distance between collocated monitors	N/A	N/A
Unrestricted airflow >= 270 deg arc	Yes	Yes
Probe height (agl)	5.3 m (estimated)	5.3 m (estimated)
Probe material	Unknown	Unknown
Residence time	Unknown	Unknown
Changes in the next 18 months?	No	No
Frequency of one-point QC check	Every other day	Every other day
Last Annual Performance Evaluation	Never	Never

Site	Sacramento-Bercut Dr	
Start Date	12/1/01	1/1/14
Collecting Agency	SMAQMD	SMAQMD
Analytical Lab	N/A	CARB
Reporting Agency	CARB	CARB
Pollutant	Black Carbon	PM2.5
Parameter code	84313	88101
POC	1	1
Instrument manufacturer and model	Anderson RTAA 800	R & P 2025, or Met One 1020
Sampling Method	Aethalometer	Lo volume with WINS, or VSCC
Sampling method code	862	118, or 170
Analysis Method	Optical Absorption	#N/A
FRM/FEM/ARM/Other	Other	FRM, or FEM
Comparable to annual PM2.5 NAAQS?	N/A	Yes
Monitoring objective	Research	NAAQS Comparison, public info
Statement of Purpose	Determines component of PM emission	Monitors near road emission
Monitor type	SLAMS	SLAMS
Site type	Source Oriented	Source Oriented
Spatial scale	Neighborhood	Neighborhood
Sampling Frequency	Continuous	1 in 3 days
Sampling season	Year Round	Year Round
Distance from supporting structure	N/A	N/A
Distance from obstructions on roof	N/A	N/A
Distance from obstruc-tions not on roof	N/A	N/A
Distance from trees	Unknown	Unknown
Distance to furnace or incinerator flue	N/A	N/A
Distance between collocated monitors	N/A	N/A
Unrestricted airflow >= 270 deg arc	Yes	Yes
Probe height (agl)	5.0 m (estimated)	5.0 m (estimated)
Probe material	Aluminum	Unknown
Residence time	Unknown	Unknown
Changes in the next 18 months?	No	No
Frequency of flow rate verification	N/A	Bi-monthly
Last two semi-annual flow rate audit	Never	Never

Site	Sacramento-Bercut Dr			
Start Date	1/1/14	1/1/14	1/1/14	1/1/14
Collecting Agency	SMAQMD	SMAQMD	SMAQMD	SMAQMD
Analytical Lab	N/A	N/A	N/A	N/A
Reporting Agency	CARB	CARB	CARB	CARB
Pollutant	Ambient Temperature	Relative Humidity	Wind Direction	Wind Speed
Parameter code	62101	62201	61104	61103
POC	1	1	1	1
Instrument manufacturer and model	Climatronics 100093	Climatronic 101669	Climatronics F-460	Climatronics F-460
Sampling Method	Instrumental	Instrumental	Instrumental	Instrumental
Sampling method code	042	012	020	020
Analysis Method	Machine Average	Hygroscopic Plastic Film	Vector Summation	Vector Summation
FRM/FEM/ARM/Other	Other	Other	Other	Other
Comparable to annual PM2.5 NAAQS?	N/A	N/A	N/A	N/A
Monitoring objective	Public info	Public info	Public info	Public info
Statement of Purpose	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology
Monitor type	SLAMS			
Site type	N/A	N/A	N/A	N/A
Spatial scale	N/A	N/A	N/A	N/A
Sampling Frequency	Continuous	Continuous	Continuous	Continuous
Sampling season	Year Round	Year Round	Year Round	Year Round
Distance from supporting structure	N/A	N/A	N/A	N/A
Distance from obstructions on roof	N/A	N/A	N/A	N/A
Distance from obstructions not on roof	N/A	N/A	N/A	N/A
Distance from trees	Unknown	Unknown	Unknown	Unknown
Distance to furnace or incinerator flue	N/A	N/A	N/A	N/A
Distance between collocated monitors	N/A	N/A	N/A	N/A
Unrestricted airflow >= 270 deg arc	Yes	Yes	Yes	Yes
Probe height (agl)	10 m	10 m	10 m	10 m
Probe material	Unknown	Unknown	Unknown	Unknown
Residence time	Unknown	Unknown	Unknown	Unknown
Changes in the next 18 months?	No	No	No	No
Frequency of one-point QC check	Unknown	Unknown	Unknown	Unknown
Last Annual Performance Evaluation	Never	Never	Never	Never

B.3 Elk Grove-Bruceville

Bruceillve air monitoring site is sited in a rural area 4 miles south of Elk Grove, CA, and 20 miles south of Downtown Sacramento. It was initiated in 1992 to replace the former Sacramento-Meadowview Road O_3 monitoring site.

This site is the upwind O_3 and ozone precursor monitoring site for our network, also known as a PAMS Type I site. It measures O_3, NO_2, total NMHC, speciated VOC (episodic only), $PM_{2.5}$ BAM, WD, WS, TMP, RH, SRD, UV radiation, precipitation, and atmospheric pressure

Adjacent to the air monitoring site is the Franklin Field Radar Wind Profiler (RWP) for measurement of upper level winds and temperature. This RWP is operated year-round. Collection of upper air meteorology data is a requirement for the PAMS program.

Site Name	Elk Grove-Bruceville
AQS Site No.	06-067-0011
Geographic Coordinates	38.302630° -121.420850° (WGS84)
Location	Rural area located 4 miles south of Elk Grove, CA.
Address	12490 Bruceville Rd, Elk Grove, CA 95758
County	Sacramento
Distance from roadway	76 m
Average Daily Traffic	1,407 Vehicles/Day (SACDOT, 2011)
Ground Cover	Vegetated
Representative Area (MSA)	Sacramento--Arden-Arcade--Roseville, CA

Site	Elk Grove-Bruceville			
Start Date	7/1/92	7/1/92	7/1/96	7/1/96
Collecting Agency	SMAQMD	SMAQMD	SMAQMD	SMAQMD
Analytical Lab	N/A	N/A	N/A	ERG, Inc
Reporting Agency	CARB	CARB	CARB	CARB
Pollutant	Ozone	Nitrogen Dioxide	Total NMHC	Speciated VOC
Parameter code	44201	42602	43102	43102
POC	1	1	1	2
Instrument manufacturer and model	TAPI 400E	TEI 42I	TEI 55C	Xontech 910A/912
Sampling Method	Instrumental	Instrumental	Instrumental	6L Pressurized Canister
Sampling method code	087	074	164	123
Analysis Method	Ultra Violet Absorption	Chemiluminescence	Flame ionization detector	Dual Fid - Pams
FRM/FEM/ARM/Other	FEM	FRM	Other	Other
Comparable to annual PM2.5 NAAQS?	N/A	N/A	N/A	N/A
Monitoring objective	NAAQS compar-ison, public info	NAAQS compar-ison, public info	Public info, research	Research
Statement of Purpose	Measures background O3 concentration at upwind site during summer season	Measures background ozone precursor concentration	Measures background ozone precursor concentration	Measures background ozone precursor concentration
Monitor type	SLAMS, PAMS (Type 1)	SLAMS, PAMS Type 1	SLAMS, PAMS (Type 1)	PAMS Type 1
Site type	Upwind/ Background	Upwind/ Background	Upwind/ Background	Upwind/ Background
Spatial scale	Urban	Neighborhood	Neighborhood	Neighborhood
Sampling Frequency	Continuous	Continuous	Continuous	1 in 3 days
Sampling season	Year Round	Year Round	Year Round	July thru Sep
Distance from supporting structure	1.3 m	1.3 m	1.3 m	2.0 m
Distance from obstructions on roof	N/A	N/A	N/A	N/A
Distance from obstruc-tions not on roof	N/A	N/A	N/A	N/A
Distance from trees	20 m	20 m	20 m	20 m
Distance to furnace or incinerator flue	N/A	N/A	N/A	N/A
Distance between collocated monitors	N/A	N/A	N/A	N/A
Unrestricted airflow >= 270 deg arc	Yes	Yes	Yes	Yes
Probe height (agl)	4.4 m	4.4 m	4.4 m	5.1 m
Probe material	FEP Teflon	FEP Teflon	FEP Teflon	Stainless Steel
Residence time	11 seconds	13 seconds	16 seconds	2 seconds
Changes in the next 18 months?	No	No	No	Yes
Frequency of one-point QC check	Every other day	Every other day	Every other day	Every other day
Last Annual Perfor-mance Evaluation	10/22/12	10/22/12	12/5/12	N/A

Site	Elk Grove-Bruceville
Start Date	12/1/00
Collecting Agency	SMAQMD
Analytical Lab	N/A
Reporting Agency	CARB
Pollutant	PM2.5
Parameter code	88501
POC	3
Instrument manufacturer and model	Met One 1020 BAM
Sampling Method	Very sharp cut cyclone
Sampling method code	731
Analysis Method	Beta Attenuation
FRM/FEM/ARM/Other	Pre-FEM
Comparable to annual PM2.5 NAAQS?	No
Monitoring objective	Public info
Statement of Purpose	Measures background concentration and transport of PM2.5 from San Jaoquin Valley for PM2.5 forecasting
Monitor type	SPM
Site type	General/Background
Spatial scale	Neighborhood
Sampling Frequency	Continuous
Sampling season	Year Round
Distance from supporting structure	15 m
Distance from obstructions on roof	N/A
Distance from obstruc-tions not on roof	N/A
Distance from trees	20 m
Distance to furnace or incinerator flue	N/A
Distance between collocated monitors	N/A
Unrestricted airflow >= 270 deg arc	Yes
Probe height (agl)	4.3 m
Probe material	N/A
Residence time	N/A
Changes in the next 18 months?	No
Frequency of flow rate verification	Bi-monthly
Last two semi-annual flow rate audit	4/26/12, 10/22/12

Site	Elk Grove-Bruceville			
Start Date	8/1/96	8/1/96	7/1/97	8/1/97
Collecting Agency	SMAQMD	SMAQMD	SMAQMD	SMAQMD
Analytical Lab	N/A	N/A	N/A	N/A
Reporting Agency	CARB	CARB	CARB	CARB
Pollutant	Ambient Temperature	Relative Humidity	Barometric Pressure	Precipitation
Parameter code	62101	62201	64101	65102
POC	1	1	1	1
Instrument manufacturer and model	Climatronics 100093	Climatronics 101669	Climatronics 101448	Climatronics 100508
Sampling Method	Instrumental	Instrumental	Instrumental	Bucket
Sampling method code	042	012	011	011
Analysis Method	Machine Average	Hygroscopic Plastic Film	Aneroid	Continuous Or Incremental
FRM/FEM/ARM/Other	Other	Other	Other	Other
Comparable to annual PM2.5 NAAQS?	N/A	N/A	N/A	N/A
Monitoring objective	Public info	Public info	Public info	Public info
Statement of Purpose	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology
Monitor type	SLAMS, PAMS (Type 1)			
Site type	N/A	N/A	N/A	N/A
Spatial scale	N/A	N/A	N/A	N/A
Sampling Frequency	Continuous	Continuous	Continuous	Continuous
Sampling season	Year Round	Year Round	Year Round	Year Round
Distance from supporting structure	N/A	N/A	N/A	N/A
Distance from obstructions on roof	N/A	N/A	N/A	N/A
Distance from obstructions not on roof	N/A	N/A	N/A	N/A
Distance from trees	20 m	20 m	20 m	20 m
Distance to furnace or incinerator flue	N/A	N/A	N/A	N/A
Distance between collocated monitors	N/A	N/A	N/A	N/A
Unrestricted airflow >= 270 deg arc	Yes	Yes	Yes	Yes
Probe height (agl)	10 m	10 m	2.0 m	3.0 m
Probe material	N/A	N/A	N/A	N/A
Residence time	N/A	N/A	N/A	N/A
Changes in the next 18 months?	No	No	No	No
Frequency of one-point QC check	N/A	N/A	N/A	N/A
Last Annual Performance Evaluation	10/22/12	N/A	10/22/12	N/A

Site	Elk Grove-Bruceville			
Start Date	8/1/96	8/1/97	8/1/96	8/1/96
Collecting Agency	SMAQMD	SMAQMD	SMAQMD	SMAQMD
Analytical Lab	N/A	N/A	N/A	N/A
Reporting Agency	CARB	CARB	CARB	CARB
Pollutant	Solar Radiation	UV Radiation	Wind Direction	Wind Speed
Parameter code	63301	63302	61104	61103
POC	1	1	1	1
Instrument manufacturer and model	Climatronics 100848	Climatronics 100TUVR	Climatronics F-460	Climatronics F-460
Sampling Method	Instrumental	Instrumental	Instrumental	Instrumental
Sampling method code	011	011	020	020
Analysis Method	Pyranometer	UV Radiometer (Photometer)	Vector Summation	Vector Summation
FRM/FEM/ARM/Other	Other	Other	Other	Other
Comparable to annual PM2.5 NAAQS?	N/A	N/A	N/A	N/A
Monitoring objective	Public info	Public info	Public info	Public info
Statement of Purpose	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology
Monitor type	SLAMS, PAMS (Type 1)			
Site type	N/A	N/A	N/A	N/A
Spatial scale	N/A	N/A	N/A	N/A
Sampling Frequency	Continuous	Continuous	Continuous	Continuous
Sampling season	Year Round	Year Round	Year Round	Year Round
Distance from supporting structure	N/A	N/A	N/A	N/A
Distance from obstructions on roof	N/A	N/A	N/A	N/A
Distance from obstructions not on roof	N/A	N/A	N/A	N/A
Distance from trees	20 m	20 m	20 m	20 m
Distance to furnace or incinerator flue	N/A	N/A	N/A	N/A
Distance between collocated monitors	N/A	N/A	N/A	N/A
Unrestricted airflow >= 270 deg arc	Yes	Yes	Yes	Yes
Probe height (agl)	10 m	10 m	10 m	10 m
Probe material	N/A	N/A	N/A	N/A
Residence time	N/A	N/A	N/A	N/A
Changes in the next 18 months?	No	No	No	No
Frequency of one-point QC check	N/A	N/A	N/A	N/A
Last Annual Performance Evaluation	N/A	N/A	10/22/12	10/22/12

Site	Elk Grove-Bruceville
Start Date	6/1/96
Collecting Agency	SMAQMD
Analytical Lab	N/A
Reporting Agency	N/A
Pollutant	Upper Level Wind Direction/Wind Speed and Virtual Temp
Parameter code	N/A
POC	N/A
Instrument manufacturer and model	Radian LAP-3000 with RASS option
Sampling Method	#N/A
Sampling method code	N/A
Analysis Method	915 MHz Radar Wind Profiler, with RASS
FRM/FEM/ARM/Other	Other
Comparable to annual PM2.5 NAAQS?	N/A
Monitoring objective	Public info, research
Statement of Purpose	Measures representative upper level meteorology
Monitor type	PAMS (Type 1)
Site type	N/A
Spatial scale	N/A
Sampling Frequency	Continuous
Sampling season	Year Round
Distance from supporting structure	N/A
Distance from obstructions on roof	N/A
Distance from obstruc-tions not on roof	N/A
Distance from trees	N/A
Distance to furnace or incinerator flue	N/A
Distance between collocated monitors	N/A
Unrestricted airflow >= 270 deg arc	Yes
Probe height (agl)	N/A
Probe material	N/A
Residence time	N/A
Changes in the next 18 months?	No
Frequency of one-point QC check	N/A
Last Annual Perfor-mance Evaluation	4/19/12

B.4 Sacramento-Del Paso Manor

This site has been in existence since 1979. This air monitoring site is the largest air monitoring site in the Sacramento Valley air basin. This site is one of the largest air monitoring sites in Northern California, in terms of number of parameters measured.

It measures O_3, CO (trace level), NO_2, NOy, SO_2 (trace level), NMHC, speciated VOC (C2-C12), Carbonyl, PM_{10} (SSI- main and collocated), PM_{10} TEOM, PM_{10} coarse, Pb-PM_{10}, $PM_{2.5}$ FRM (main and collocated), $PM_{2.5}$ BAM, Speciated $PM_{2.5}$ (SASS), Black Carbon (Aethalometer), Scattering Coefficient (Nephelometer), WD-resultant, WS-resultant, ambient temperature, relative humidity, and total solar radiation.

This site is a PAMS Type II primary site and a $PM_{2.5}$ Chemical Speciation Network (CSN) site. This site is the current $PM_{2.5}$ design value site for this MSA.

In October 2009, EPA-Region IX approved this monitoring site as an NCore site. This is one of six NCore sites operating in California. To accommodate the NCore monitoring instrumentation, the District expanded the size of the existing roof deck, added a 10 meter NOY converter tower, and upgraded the electrical capacity in Spring 2010.

Site Name	Sacramento-Del Paso Manor
AQS Site No.	06-067-0006
Geographic Coordinates	38.613804°, -121.368007° (WGS84)
Location	Neighborhood park located 7 miles east-northeast of downtown Sacramento.
Address	2701 Avalon Drive, Sacramento, CA 95821
County	Sacramento
Distance from roadway	30 m
Average Daily Traffic	1,000 Vehicles/Day (estimated)
Ground Cover	Vegetated
Representative Area (MSA)	Sacramento--Arden-Arcade--Roseville, CA

Site	Sacramento-Del Paso Manor			
Start Date	12/1/79	7/1/11	12/1/79	7/1/11
Collecting Agency	SMAQMD	SMAQMD	SMAQMD	SMAQMD
Analytical Lab	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Reporting Agency	CARB	CARB	CARB	CARB
Pollutant	Ozone	Carbon Monoxide (trace level)	Nitrogen Dioxide	Reactive Nitrogen Oxide
Parameter code	44201	42101	42602	42600
POC	1	1	1	1
Instrument manufacturer and model	TAPI 400E	TAPI 300EU	TEI 42C	TEI 42I-Y
Sampling Method	Instrumental	Instrumental	Instrumental	Instrumental
Sampling method code	087	593	074	574
Analysis Method	Ultra Violet Absorption	Gas Filter Correlation	Chemiluminescence	Chemiluminescence
FRM/FEM/ARM/Other	FEM	FRM	FRM	Other
Comparable to annual PM2.5 NAAQS?	N/A	N/A	N/A	N/A
Monitoring objective	NAAQS compar-ison, public info	NAAQS compar-ison, public info	NAAQS compar-ison, public info	Public info
Statement of Purpose	Measures elevated summer O3 levels near the dow nw ind edge of the central business district	Measures representative w intertime CO concentration in populated area	Measures O3 precursor emission near dow nw ind edge of central business district	Measures representative concentration in populated area
Monitor type	SLAMS, NCORE, PAMS (Type 2)	SLAMS, NCORE, PAMS (Type 2)	SLAMS, NCORE, PAMS (Type 2)	NCORE
Site type	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Sampling Frequency	Continuous	Continuous	Continuous	Continuous
Sampling season	Year Round	Year Round	Year Round	Year Round
Distance from supporting structure	2.0 m	2.0 m	2.0 m	2.0 m
Distance from obstructions on roof	N/A	N/A	N/A	N/A
Distance from obstruc-tions not on roof	N/A	N/A	N/A	N/A
Distance from trees	22 m	22 m	22 m	22 m
Distance to furnace or incinerator flue	N/A	N/A	N/A	N/A
Distance between collocated monitors	N/A	N/A	N/A	N/A
Unrestricted airflow >= 270 deg arc	Yes	Yes	Yes	Yes
Probe height (agl)	5.3 m	5.3 m	5.3 m	10 m
Probe material	FEP Teflon	FEP Teflon	FEP Teflon	FEP Teflon
Residence time	7 seconds	12 seconds	8 seconds	4 seconds
Changes in the next 18 months?	No	No	No	No
Frequency of one-point QC check	Every fourth day	Every fourth day	Every fourth day	Every fourth day
Last Annual Perfor-mance Evaluation	8/20/12, 10/12/12	8/20/12	10/12/12	NA

Site	Sacramento-Del Paso Manor			
Start Date	7/1/11	8/1/94	8/1/94	8/1/96
Collecting Agency	SMAQMD	SMAQMD	SMAQMD	SMAQMD
Analytical Lab	N/A	N/A	ERG, Inc	ERG, Inc.
Reporting Agency	CARB	CARB	CARB	CARB
Pollutant	Sulfur Dioxide (trace level)	Total NMHC	Speciated VOC	Carbonyl
Parameter code	42401	43102	43102	Multiple
POC	2	2	1	1
Instrument manufacturer and model	TAPI 100EU	TEI 55C	Xontech 910A/912	Xontech 925
Sampling Method	Instrumental	Instrumental	6L Pressurized Canister	DNPH Silica gel
Sampling method code	600	164	123	202
Analysis Method	Ultraviolet Fluorescence	Flame ionization detector	Dual FID	(multiple)
FRM/FEM/ARM/Other	FEM	Other	Other	Other
Comparable to annual PM2.5 NAAQS?	N/A	N/A	N/A	N/A
Monitoring objective	NAAQS compar-ison, public info	Public info, research	Research	Research
Statement of Purpose	Measures representative concentration in populated area	Measures O3 precursor emission near dow nw ind edge of central business district	Measures O3 precursor emission near dow nw ind edge of central business district	Measures O3 precursor emission near dow nw ind edge of central business district
Monitor type	SLAMS, NCORE	SLAMS, PAMS (Type 2)	SLAMS, PAMS (Type 2)	PAMS (Type 2)
Site type	Population Exposure	Highest concen-tration, population exposure	Highest concen-tration, population exposure	Highest concen-tration, population exposure
Spatial scale	Urban	Neighborhood	Neighborhood	Neighborhood
Sampling Frequency	Continuous	Continuous	1 in 3 days	1 in 3 days
Sampling season	Year Round	Year Round	July thru Sep	July thru Sep
Distance from supporting structure	2.0 m	2.0 m	2.1 m	2.1 m
Distance from obstructions on roof	N/A	N/A	N/A	N/A
Distance from obstruc-tions not on roof	N/A	N/A	N/A	N/A
Distance from trees	22 m	22 m	22 m	22 m
Distance to furnace or incinerator flue	N/A	N/A	N/A	N/A
Distance between collocated monitors	N/A	N/A	N/A	N/A
Unrestricted airflow >= 270 deg arc	Yes	Yes	Yes	Yes
Probe height (agl)	5.3 m	5.3 m	5.4 m	5.4 m
Probe material	FEP Teflon	FEP Teflon	Stainless Steel	Stainless Steel
Residence time	16 seconds	12 seconds	3 seconds	3 seconds
Changes in the next 18 months?	No	No	No	No
Frequency of one-point QC check	Every fourth day	Every fourth day	N/A	N/A
Last Annual Perfor-mance Evaluation	8/20/12	2/2/12	N/A	N/A

Site	Sacramento-Del Paso Manor			
Start Date	12/1/01	12/1/01	1/1/86	1/1/86
Collecting Agency	SMAQMD	SMAQMD	SMAQMD	SMAQMD
Analytical Lab	N/A	SMAQMD	CARB	RTI
Reporting Agency	CARB	CARB	CARB	CARB
Pollutant	Black Carbon	Scattering Coefficient	PM10	PM10 (collocated)
Parameter code	84313	11203	81102	81102
POC	1	1	1	2
Instrument manufacturer and model	Anderson RTAA 800	Radiance Research M903	Sierra-Anderson 1200	Sierra-Anderson 1200
Sampling Method	Aethalometer	Low volume with heated inlet	Hi Volume	Hi Volume
Sampling method code	862	771	063	063
Analysis Method	Optical Absorption	Nephelometry	Gravimetric	Gravimetric
FRM/FEM/ARM/Other	Other	Other	FRM	FRM
Comparable to annual PM2.5 NAAQS?	N/A	No	N/A	N/A
Monitoring objective	Research	Research	NAAQS compar-ison, public info	NAAQS compar-ison, public info
Statement of Purpose	Installed for CRPAQS study in 1999	Installed for CRPAQS study in 1999	Measures w intertime elevated PM level from motor vehicles and residential w ood combustion	Collocated for QA purpose and Provides substitute data if necessary
Monitor type	SPM	SPM	SLAMS	SLAMS
Site type	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Sampling Frequency	Continuous	Continuous	1 in 6 days	1 in 6 days
Sampling season	Year Round	Year Round	Year Round	Year Round
Distance from supporting structure	1.8 m	1.0 m	2.0 m	2.0 m
Distance from obstructions on roof	N/A	N/A	N/A	N/A
Distance from obstruc-tions not on roof	N/A	N/A	N/A	N/A
Distance from trees	22 m	22 m	22 m	22 m
Distance to furnace or incinerator flue	N/A	N/A	N/A	N/A
Distance between collocated monitors	N/A	N/A	2 m	2 m
Unrestricted airflow >= 270 deg arc	Yes	Yes	Yes	Yes
Probe height (agl)	5.1 m	4.5 m	5.0 m	5.0 m
Probe material	Aluminum	PVC Plastic	N/A	N/A
Residence time	1 seconds	N/A	N/A	N/A
Changes in the next 18 months?	No	Yes	No	No
Frequency of flow rate verification	N/A	N/A	Monthly	Monthly
Last two semi-annual flow rate audit	N/A	N/A	4/19/12, 10/12/12	4/19/12, 10/12/12

Site	Sacramento-Del Paso Manor			
Start Date	1/1/99	2/1/99	5/1/00	2/1/00
Collecting Agency	SMAQMD	SMAQMD	SMAQMD	SMAQMD
Analytical Lab	CARB	CARB	N/A	RTI
Reporting Agency	CARB	CARB	CARB	RTI
Pollutant	PM2.5 (primary)	PM2.5 (collocated)	PM2.5	Speciated PM2.5
Parameter code	88101	88101	88502	68103
POC	1	2	3	5
Instrument manufacturer and model	R & P 2025	R & P 2025	Met One 1020 BAM	Met One SASS
Sampling Method	Low volume with VSCC	Low volume with VSCC	Very sharp cut cyclone	#N/A
Sampling method code	118	118	731	810, 811, 812
Analysis Method	Gravimetric	Gravimetric	Beta Attenuation	#N/A
FRM/FEM/ARM/Other	FRM	FRM	Pre-FEM	Other
Comparable to annual PM2.5 NAAQS?	Yes	Yes	No	No
Monitoring objective	NAAQS Comparison	NAAQS Comparison	Public info	Research
Statement of Purpose	Measures w intertime elevated PM level from motor vehicles and residential w ood combustion	Collocated for QA purpose and Provides substitute data if necessary	Provides real time PM Measuresment from motor vehicles and residential w ood combustion	Provides speciation data on urban PM emission
Monitor type	SLAMS	SLAMS	SPM	SLAMS, CSN, NCORE
Site type	Highest concen-tration, population exposure	Highest concen-tration, population exposure	Highest concen-tration, population exposure	Highest concen-tration, population exposure
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Sampling Frequency	1 in 3 days	1 in 12 days	Continuous	1 in 3 days
Sampling season	Year Round	Year Round	Year Round	Year Round
Distance from supporting structure	2.0 m	2.0 m	2.0 m	1.9 m
Distance from obstructions on roof	N/A	N/A	N/A	N/A
Distance from obstruc-tions not on roof	N/A	N/A	N/A	N/A
Distance from trees	22 m	22 m	22 m	22 m
Distance to furnace or incinerator flue	N/A	N/A	N/A	N/A
Distance between collocated monitors	2 m	2 m	N/A	N/A
Unrestricted airflow >= 270 deg arc	Yes	Yes	Yes	Yes
Probe height (agl)	5.0 m	5.0 m	5.3 m	5.2
Probe material	N/A	N/A	N/A	N/A
Residence time	N/A	N/A	N/A	N/A
Changes in the next 18 months?	No	No	Yes	No
Frequency of flow rate verification	Bi-Monthly	Bi-Monthly	Bi-monthly	Monthly
Last two semi-annual flow rate audit	4/19/12, 10/12/12	4/19/12, 10/12/12	4/19/12, 10/12/12	5/4/12, 10/19/12

Site	Sacramento-Del Paso Manor		
Start Date	4/1/09	4/1/12	4/1/12
Collecting Agency	SMAQMD	SMAQMD	SMAQMD
Analytical Lab	RTI	CARB	RTI
Reporting Agency	RTI	CARB	CARB
Pollutant	Organic and elemental carbon	PM10 (coarse)	Lead
Parameter code	(multiple)	85101	85129
POC	5	7	4
Instrument manufacturer and model	URG 3000N	R & P 2025	R & P 2025
Sampling Method	Quartz filter and cyclone inlet	Low volume with VSCC	Low volume with VSCC
Sampling method code	842, 826	127	811
Analysis Method	(multiple)	Gravimetric	X-Ray Fluorescence
FRM/FEM/ARM/Other	Other	FRM	FRM
Comparable to annual PM2.5 NAAQS?	N/A	N/A	N/A
Monitoring objective	Research	NAAQS compar-ison, public info	NAAQS compar-ison, public info
Statement of Purpose	Provides speciation data on urban PM emission	Measures PM mass to provide PM10-2.5 data	Measures representative Pb concentration
Monitor type	CSN	NCORE	NCORE
Site type	Highest concentration	Population Exposure	Population Exposure
Spatial scale	Neighborhood	Neighborhood	Urban
Sampling Frequency	1 in 3 days	1 in 6 days	1 in 6 days
Sampling season	Year Round	Year Round	Year Round
Distance from supporting structure	1.9 m	2.0 m	2.0 m
Distance from obstructions on roof	N/A	N/A	N/A
Distance from obstruc-tions not on roof	N/A	N/A	N/A
Distance from trees	22 m	22 m	22 m
Distance to furnace or incinerator flue	N/A	N/A	N/A
Distance between collocated monitors	N/A	2 m	N/A
Unrestricted airflow >= 270 deg arc	Yes	Yes	Yes
Probe height (agl)	5.2	5.0 m	5.0 m
Probe material	N/A	N/A	N/A
Residence time	N/A	N/A	N/A
Changes in the next 18 months?	No	No	No
Frequency of flow rate verification	Monthly	Bi-monthly	Bi-monthly
Last two semi-annual flow rate audit	5/4/12, 10/19/12	4/19/12, 10/12/12	4/19/12, 10/12/12

Site	Sacramento-Del Paso Manor				
Start Date	8/1/94	8/1/94	9/1/94	8/1/94	8/1/94
Collecting Agency	SMAQMD	SMAQMD	SMAQMD	SMAQMD	SMAQMD
Analytical Lab	N/A	N/A	N/A	N/A	N/A
Reporting Agency	CARB	CARB	CARB	CARB	CARB
Pollutant	Ambient Temperature	Relative Humidity	Solar Radiation	Wind Direction	Wind Speed
Parameter code	62101	62201	63301	61104	61103
POC	1	1	1	1	1
Instrument manufacturer and model	Climatronics 100093	Climatronic 101669	Climatronics 100848	Climatronics F-460	Climatronics F-460
Sampling Method	Instrumental	Instrumental	Instrumental	Instrumental	Instrumental
Sampling method code	042	012	011	020	020
Analysis Method	Machine Average	Hygroscopic Plastic Film	Pyranometer	Vector Summation	Vector Summation
FRM/FEM/ARM/Other	Other	Other	Other	Other	Other
Comparable to annual PM2.5 NAAQS?	N/A	N/A	N/A	N/A	N/A
Monitoring objective	Public info	Public info	Public info	Public info	Public info
Statement of Purpose	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology
Monitor type	SLAMS, NCORE, PAMS (Type 2)				
Site type	N/A	N/A	N/A	N/A	N/A
Spatial scale	N/A	N/A	N/A	N/A	N/A
Sampling Frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Sampling season	Year Round	Year Round	Year Round	Year Round	Year Round
Distance from supporting structure	N/A	N/A	N/A	N/A	N/A
Distance from obstructions on roof	N/A	N/A	N/A	N/A	N/A
Distance from obstructions not on roof	N/A	N/A	N/A	N/A	N/A
Distance from trees	22 m	22 m	22 m	22 m	22 m
Distance to furnace or incinerator flue	N/A	N/A	N/A	N/A	N/A
Distance between collocated monitors	N/A	N/A	N/A	N/A	N/A
Unrestricted airflow >= 270 deg arc	Yes	Yes	Yes	Yes	Yes
Probe height (agl)	10 m	10 m	10 m	10 m	10 m
Probe material	N/A	N/A	N/A	N/A	N/A
Residence time	N/A	N/A	N/A	N/A	N/A
Changes in the next 18 months?	No	No	No	No	No
Frequency of one-point QC check	N/A	N/A	N/A	N/A	N/A
Last Annual Performance Evaluation	10/12/12	N/A	N/A	10/12/12	10/12/12

B.5 Sacramento-El Camino Watt

Sacramento-El Camino/Watt has been in existence since 1981. This site is a micro-scale CO monitoring station.

In September 2011, EPA approved the District's site termination request due to a street/sidewalk improvement project in 2012 that requires termination or relocation of this air monitoring station. The site termination is contingent on the construction project obtaining funding and being approved to proceed.

Site Name	Sacramento- El Camino/Watt
AQS Site No.	06-067-0007
Geographic Coordinates	38.61°, -121.38° (NAD27)
Location	Shopping Center located 6.5 miles east-northeast of downtown Sacramento.
Address	3535 El Camino Avenue, Sacramento, CA 95825
County	Sacramento
Distance from roadway	2 m
Average Daily Traffic	18,891 Vehicles/Day (SACDOT, 2010)
Ground Cover	Paved
Representative Area (MSA)	Sacramento--Arden-Arcade--Roseville, CA

Site	Sacramento-El Camino Watt
Start Date	11/1/01
Collecting Agency	SMAQMD
Analytical Lab	N/A
Reporting Agency	CARB
Pollutant	Carbon Monoxide
Parameter code	42101
POC	1
Instrument manufacturer and model	TEI 48C
Sampling Method	Instrumental
Sampling method code	054
Analysis Method	Nondispersive Infrared
FRM/FEM/ARM/Other	FRM
Comparable to annual PM2.5 NAAQS?	N/A
Monitoring objective	NAAQS comparison, public info
Statement of Purpose	Measures CO concentration near a busy traffic intersection with rush hour congestion
Monitor type	SLAMS
Site type	Highest concentration
Spatial scale	Micro-scale
Sampling Frequency	Continuous
Sampling season	Year Round
Distance from supporting structure	1.1 m
Distance from obstructions on roof	N/A
Distance from obstructions not on roof	4 m
Distance from trees	N/A
Distance to furnace or incinerator flue	N/A
Distance between collocated monitors	N/A
Unrestricted airflow >= 270 deg arc	Yes
Probe height (agl)	3.0 m
Probe material	FEP Teflon
Residence time	16 seconds
Changes in the next 18 months?	Yes
Frequency of one-point QC check	Every Other Day
Last Annual Performance Evaluation	10/23/12

B.6 Folsom-Natoma St

This site is in operation since 1996. This site replaced the former Folsom-Liedesdoff Street site. Approximately 20 miles northeast of Downtown Sacramento, Folsom-Natoma site is the maximum summertime O_3 monitoring site within Sacramento County, for days with the prevailing afternoon southwesterly winds.

This site measures: O_3, NO_2, $PM_{2.5}$ BAM, Total NMHC, Speciated VOC, WD, WS, Temp, RH, and SRD.

This site is a PAMS Type III site.

Site Name	Folsom-Natoma Street
AQS Site No.	06-067-0012
Geographic Coordinates	38.683304°, -121.164457° (WGS84)
Location	Folsom City Hall (parking lot), located 20 miles east-northeast of downtown Sacramento.
Address	50 Natoma Street, Folsom, CA 95630
County	Sacramento
Distance from roadway	183 m
Average Daily Traffic	20,891 Vehicles/Day @ Natoma St. & Riley St. (City of Folsom, 2009)
Ground Cover	Vegetated
Representative Area (MSA)	Sacramento--Arden-Arcade--Roseville, CA

Site	Folsom-Natoma St.				
Start Date	7/1/96	7/1/96	7/1/11	7/1/96	7/1/96
Collecting Agency	SMAQMD	SMAQMD	SMAQMD	SMAQMD	SMAQMD
Analytical Lab	N/A	N/A	N/A	N/A	N/A
Reporting Agency	CARB	CARB	CARB	CARB	CARB
Pollutant	Ozone	Nitrogen Dioxide	NOY	Total NMHC	Speciated VOC
Parameter code	44201	42602	42600	43102	43102
POC	1	1	1	1	2
Instrument manufacturer and model	TAPI 400E	TEI 42C	TEI 42I-Y	TEI 55C	Xontech 910A/912
Sampling Method	Instrumental	Instrumental	Instrumental	Instrumental	6L Pressurized Canister
Sampling method code	087	074	574	164	123
Analysis Method	Ultra Violet Absorption	Chemilumine-scence	Chemilumine-scence	FID	Dual FID
FRM/FEM/ARM/Other	FEM	FRM	Other	Other	Other
Comparable to annual PM2.5 NAAQS?	N/A	N/A	N/A	N/A	N/A
Monitoring objective	NAAQS com-parison, public info	NAAQS com-parison, public info	Public info	Public info, research	Research
Statement of Purpose	Measure highest summer O3 level dow nw ind of urban area	Measures concentration downwind of urban area	Measures representative concentration	Measures concentration downwind of urban area	Measures concentration downwind of urban area
Monitor type	SLAMS, PAMS (Type 3)				
Site type	Max O3 Concen-tration, Popula-tion Exposure	Highest concentration	Population Exposure	Highest concentration	Highest concentration
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Sampling Frequency	Continuous	Continuous	Continuous	Continuous	1 in 3 days
Sampling season	Year Round	Year Round	Year Round	Year Round	July thru Sep
Distance from supporting structure	1.1 m	1.8 m	N/A	1.8 m	1.8 m
Distance from obstructions on roof	N/A	N/A	N/A	N/A	N/A
Distance from obstruc-tions not on roof	N/A	N/A	N/A	N/A	N/A
Distance from trees	N/A	N/A	N/A	N/A	N/A
Distance to furnace or incinerator flue	N/A	N/A	N/A	N/A	N/A
Distance between collocated monitors	N/A	N/A	N/A	N/A	N/A
Unrestricted airflow >= 270 deg arc	Yes	Yes	Yes	Yes	Yes
Probe height (agl)	5.3 m	5.3 m	10 m	5.3 m	5.3 m
Probe material	FEP Teflon	FEP Teflon	FEP Teflon	FEP Teflon	Stainless Steel
Residence time	11 seconds	11 seconds	9 seconds	12 seconds	3 seconds
Changes in the next 18 months?	No	No	No	No	No
Frequency of one-point QC check	Every other day	Every other day	Every other day	Every other day	N/A
Last Annual Perfor-mance Evaluation	10/25/12	10/25/12	N/A	12/14/12	N/A

Site	Folsom-Natoma St.
Start Date	5/1/02
Collecting Agency	SMAQMD
Analytical Lab	N/A
Reporting Agency	CARB
Pollutant	PM2.5
Parameter code	88501
POC	3
Instrument manufacturer and model	Met One 1020 BAM
Sampling Method	Very sharp cut cyclone
Sampling method code	731
Analysis Method	Beta Attenuation
FRM/FEM/ARM/Other	Pre-FEM
Comparable to annual PM2.5 NAAQS?	No
Monitoring objective	Public info
Statement of Purpose	Measures representative concentration
Monitor type	SLAMS
Site type	Population Exposure
Spatial scale	Neighborhood
Sampling Frequency	Continuous
Sampling season	Year Round
Distance from supporting structure	1.5 m
Distance from obstructions on roof	N/A
Distance from obstructions not on roof	N/A
Distance from trees	N/A
Distance to furnace or incinerator flue	N/A
Distance between collocated monitors	N/A
Unrestricted airflow >= 270 deg arc	Yes
Probe height (agl)	4.3 m
Probe material	N/A
Residence time	N/A
Changes in the next 18 months?	No
Frequency of flow rate verification	Bi-monthly
Last two semi-annual flow rate audit	4/23/12, 10/25/12

Site	Folsom-Natoma St.				
Start Date	7/1/96	7/1/96	7/1/96	7/1/96	7/1/96
Collecting Agency	SMAQMD	SMAQMD	SMAQMD	SMAQMD	SMAQMD
Analytical Lab	N/A	N/A	N/A	N/A	N/A
Reporting Agency	CARB	CARB	CARB	CARB	CARB
Pollutant	Ambient Temperature	Relative Humidity	Solar Radiation	Wind Direction	Wind Speed
Parameter code	62101	62201	63301	61104	61103
POC	1	1	1	1	1
Instrument manufacturer and model	Climatronics 100093	Climatronics 101669	Climatronics 100848	Climatronics F-460	Climatronics F-460
Sampling Method	Instrumental	Instrumental	Instrumental	Instrumental	Instrumental
Sampling method code	042	012	011	020	020
Analysis Method	Machine Average	Hygroscopic Plastic Film	Pyranometer	Vector Summation	Vector Summation
FRM/FEM/ARM/Other	Other	Other	Other	Other	Other
Comparable to annual PM2.5 NAAQS?	N/A	N/A	N/A	N/A	N/A
Monitoring objective	Public info	Public info	Public info	Public info	Public info
Statement of Purpose	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology
Monitor type	SLAMS, PAMS (Type 3)				
Site type	N/A	N/A	N/A	N/A	N/A
Spatial scale	N/A	N/A	N/A	N/A	N/A
Sampling Frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Sampling season	Year Round	Year Round	Year Round	Year Round	Year Round
Distance from supporting structure	N/A	N/A	N/A	N/A	N/A
Distance from obstructions on roof	N/A	N/A	N/A	N/A	N/A
Distance from obstructions not on roof	N/A	N/A	N/A	N/A	N/A
Distance from trees	N/A	N/A	N/A	N/A	N/A
Distance to furnace or incinerator flue	N/A	N/A	N/A	N/A	N/A
Distance between collocated monitors	N/A	N/A	N/A	N/A	N/A
Unrestricted airflow >= 270 deg arc	Yes	Yes	Yes	Yes	Yes
Probe height (agl)	10 m	10 m	10 m	10 m	10 m
Probe material	N/A	N/A	N/A	N/A	N/A
Residence time	N/A	N/A	N/A	N/A	N/A
Changes in the next 18 months?	No	No	No	No	No
Frequency of one-point QC check	N/A	N/A	N/A	N/A	N/A
Last Annual Performance Evaluation	10/25/12	N/A	N/A	10/25/12	10/25/12

B.7 Sacramento-Goldenland Ct.

This site was established in late 2008 to replace the former Airport Rd. monitoring site, which was one mile away.

This site measures O_3, CO, NO_2, Total NMHC, PM_{10}, WD, WS, Temp, RH, and SRD.

Site Name	Goldenland Court
AQS Site No.	06-067-0014
Geographic Coordinates	38.650716°, -121.506650° (WGS84)
Location	Site located 5 miles north of downtown Sacramento, in a residential/commercial area.
Address	68 Goldenland Court, Sacramento, CA 95834
County	Sacramento
Distance from roadway	120 m
Average Daily Traffic	750 Vehicles/Day (Estimated)
Ground Cover	Vegetated
Representative Area (MSA)	Sacramento--Arden-Arcade--Roseville, CA

Site	Sacramento-Goldenland Ct.			
Start Date	10/1/08	10/1/08	10/1/08	10/1/08
Collecting Agency	SMAQMD	SMAQMD	SMAQMD	SMAQMD
Analytical Lab	N/A	N/A	N/A	N/A
Reporting Agency	CARB	CARB	CARB	CARB
Pollutant	Ozone	Carbon Monoxide	Nitrogen Dioxide	Total NMHC
Parameter code	44201	42101	42602	43102
POC	1	1	1	1
Instrument manufacturer and model	TAPI 400E	TEI 48	TEI 42C	TEI 55C
Sampling Method	Instrumental	Instrumental	Instrumental	Instrumental
Sampling method code	087	054	074	164
Analysis Method	Ultra Violet Absorption	Nondispersive Infrared	Chemiluminescence	Flame ionization detector
FRM/FEM/ARM/Other	FEM	FRM	FRM	Other
Comparable to annual PM2.5 NAAQS?	N/A	N/A	N/A	N/A
Monitoring objective	NAAQS compar-ison, public info	NAAQS compar-ison, public info	NAAQS compar-ison, public info	Public info, research
Statement of Purpose	Measures O3 concentration near downwind edge of Central Business District	Measures representation concentrations	Measures precursor concentration near dow nw ind edge of Central Business District	Measures precursor concentration near dow nw ind edge of Central Business District
Monitor type	SLAMS, PAMS (Type 2)	SLAMS	SLAMS, PAMS (Type 2)	SLAMS, PAMS (Type 2)
Site type	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Spatial scale	Urban	Neighborhood	Neighborhood	Neighborhood
Sampling Frequency	Continuous	Continuous	Continuous	Continuous
Sampling season	Year Round	Year Round	Year Round	Year Round
Distance from supporting structure	1.9 m	1.9 m	1.9 m	1.9 m
Distance from obstructions on roof	N/A	N/A	N/A	N/A
Distance from obstruc-tions not on roof	N/A	N/A	N/A	N/A
Distance from trees	20 m	20 m	20 m	20 m
Distance to furnace or incinerator flue	N/A	N/A	N/A	N/A
Distance between collocated monitors	N/A	N/A	N/A	N/A
Unrestricted airflow >= 270 deg arc	Yes	Yes	Yes	Yes
Probe height (agl)	5.3 m	5.3 m	5.3 m	5.3 m
Probe material	FEP Teflon	FEP Teflon	FEP Teflon	FEP Teflon
Residence time	17 seconds	15 seconds	17 seconds	17 seconds
Changes in the next 18 months?	Yes	Yes	Yes	Yes
Frequency of one-point QC check	Every other day	Every other day	Every other day	Every other day
Last Annual Perfor-mance Evaluation	9/19/12	9/19/12	9/19/12	12/3/12

Site	Sacramento-Goldenland Ct.	
Start Date	10/1/08	6/1/10
Collecting Agency	SMAQMD	SMAQMD
Analytical Lab	SMAQMD	N/A
Reporting Agency	CARB	CARB
Pollutant	PM10	PM10
Parameter code	81102	85101
POC	1	3
Instrument manufacturer and model	Sierra Anderson 1200	R & P 1400A
Sampling Method	Hi Volume	Instrumental
Sampling method code	063	079
Analysis Method	Gravimetric	TEOM-Gravimetric
FRM/FEM/ARM/Other	FRM	FEM
Comparable to annual PM2.5 NAAQS?	N/A	N/A
Monitoring objective	NAAQS comparison, public info	NAAQS comparison, public info
Statement of Purpose	Measures representation concentrations	Measures representation concentrations
Monitor type	SLAMS	SLAMS
Site type	Population Exposure	Population Exposure
Spatial scale	Neighborhood	Neighborhood
Sampling Frequency	1 in 6 days	Continuous
Sampling season	Year Round	Year Round
Distance from supporting structure	2.0 m	1.8 m
Distance from obstructions on roof	N/A	N/A
Distance from obstructions not on roof	N/A	N/A
Distance from trees	20 m	20 m
Distance to furnace or incinerator flue	N/A	N/A
Distance between collocated monitors	N/A	N/A
Unrestricted airflow >= 270 deg arc	Yes	Yes
Probe height (agl)	5.4 m	5.0 m
Probe material	N/A	N/A
Residence time	N/A	N/A
Changes in the next 18 months?	Yes	Yes
Frequency of flow rate verification	Monthly	Bi-monthly
Last two semi-annual flow rate audit	4/16/12, 9/19/12	4/16/12, 9/19/12

Site	Sacramento-Goldenland Ct.				
Start Date	10/1/08	10/1/08	10/1/08	10/1/08	10/1/08
Collecting Agency	SMAQMD	SMAQMD	SMAQMD	SMAQMD	SMAQMD
Analytical Lab	N/A	N/A	N/A	N/A	N/A
Reporting Agency	CARB	CARB	CARB	CARB	CARB
Pollutant	Ambient Temperature	Relative Humidity	Solar Radiation	Wind Direction	Wind Speed
Parameter code	62101	62201	63301	61104	61103
POC	1	1	1	1	1
Instrument manufacturer and model	Climatronics 100093	Climatronics 101669	Climatronics 100848	Climatronics F-460	Climatronics F-460
Sampling Method	Instrumental	Instrumental	Instrumental	Instrumental	Instrumental
Sampling method code	042	012	011	020	020
Analysis Method	Machine Average	Hygroscopic Plastic Film	Pyranometer	Vector Summation	Vector Summation
FRM/FEM/ARM/Other	Other	Other	Other	Other	Other
Comparable to annual PM2.5 NAAQS?	N/A	N/A	N/A	N/A	N/A
Monitoring objective	Public info	Public info	Public info	Public info	Public info
Statement of Purpose	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology
Monitor type	SLAMS, PAMS (Type 2)				
Site type	N/A	N/A	N/A	N/A	N/A
Spatial scale	N/A	N/A	N/A	N/A	N/A
Sampling Frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Sampling season	Year Round	Year Round	Year Round	Year Round	Year Round
Distance from supporting structure	N/A	N/A	N/A	N/A	N/A
Distance from obstructions on roof	N/A	N/A	N/A	N/A	N/A
Distance from obstructions not on roof	N/A	N/A	N/A	N/A	N/A
Distance from trees	> 20 m	> 20 m	> 20 m	> 20 m	> 20 m
Distance to furnace or incinerator flue	N/A	N/A	N/A	N/A	N/A
Distance between collocated monitors	N/A	N/A	N/A	N/A	N/A
Unrestricted airflow >= 270 deg arc	Yes	Yes	Yes	Yes	Yes
Probe height (agl)	10 m	10 m	10 m	10 m	10 m
Probe material	N/A	N/A	N/A	N/A	N/A
Residence time	N/A	N/A	N/A	N/A	N/A
Changes in the next 18 months?	Yes	Yes	Yes	Yes	Yes
Frequency of one-point QC check	N/A	N/A	N/A	N/A	N/A
Last Annual Performance Evaluation	9/19/12	N/A	N/A	9/19/12	9/19/12

B.8 North Highlands-Blackfoot

North Highlands- Blackfoot has been in existence since 1979. It is a Special Purpose Monitoring site for O_3, CO, and NO_2. This site is a SLAMS site for PM-10 SSI. SO_2 was terminated in late 2010.

This entire site was designated as SPM upon its establishment. The original site objective was to collect data in support of a proposed power plant project (Prevention of Significant Deterioration) at McClellan Air Force Base, which was located 3 miles southwest of the site. The purposed power plant project was canceled during the early 1980's. The Air Force Base was closed in 2001.

During an annual review of network design in the mid-1990s, the District needed additional NAMS sites for SO_2 and PM_{10} to meet minimum monitoring requirements. Thus, the designation of the SO_2 and PM_{10} monitors at North Highlands was changed from SPM to NAMS, which is now categorized as SLAMS.

Site Name	North Highlands-Blackfoot
AQS Site No.	06-067-0002
Geographic Coordinates	38.71209°, -121.38109° (WGS84)
Location	Residential area located 11 miles north-northeast of downtown Sacramento.
Address	7823 Blackfoot Way, Antelope, CA 95843
County	Sacramento
Distance from roadway	100 m
Average Daily Traffic	1,000 Vehicles/Day (Estimated)
Ground Cover	Paved (to north), vegetated (to south)
Representative Area (MSA)	Sacramento--Arden-Arcade--Roseville, CA

Site	North Highlands-Blackfoot Way		
Start Date	12/1/79	12/1/79	12/1/79
Collecting Agency	SMAQMD	SMAQMD	SMAQMD
Analytical Lab	N/A	N/A	N/A
Reporting Agency	CARB	CARB	CARB
Pollutant	Ozone	Carbon Monoxide	Nitrogen Dioxide
Parameter code	44201	42101	42602
POC	1	1	1
Instrument manufacturer and model	TAPI 400E	TEI 48C	TEI 42I
Sampling Method	Instrumental	Instrumental	Instrumental
Sampling method code	087	054	074
Analysis Method	Ultra Violet Absorption	Nondispersive Infrared	Chemiluminescence
FRM/FEM/ARM/Other	FEM	FRM	FRM
Comparable to annual PM2.5 NAAQS?	N/A	N/A	N/A
Monitoring objective	NAAQS comparison, research	NAAQS comparison, public info	NAAQS comparison, research
Statement of Purpose	Measures representative concentrations	Measures representative concentrations	Measures representative concentrations
Monitor type	SPM	SPM	SPM
Site type	Population Exposure	Population Exposure	Population Exposure
Spatial scale	Urban	Neighborhood	Neighborhood
Sampling Frequency	Continuous	Continuous	Continuous
Sampling season	Year Round	Year Round	Year Round
Distance from supporting structure	2.0 m	2.0 m	2.0 m
Distance from obstructions on roof	N/A	N/A	N/A
Distance from obstructions not on roof	N/A	N/A	N/A
Distance from trees	10 m	10 m	10 m
Distance to furnace or incinerator flue	N/A	N/A	N/A
Distance between collocated monitors	N/A	N/A	N/A
Unrestricted airflow >= 270 deg arc	Yes	Yes	Yes
Probe height (agl)	5.0 m	5.0 m	5.0 m
Probe material	FEP Teflon	FEP Teflon	FEP Teflon
Residence time	16 seconds	19 seconds	19 seconds
Changes in the next 18 months?	Yes	Yes	No
Frequency of one-point QC check	Every Other Day	Every Other Day	Every Other Day
Last Annual Performance Evaluation	10/23/12	10/23/12	10/23/12

Site	North Highlands-Blackfoot Way
Start Date	1/1/89
Collecting Agency	SMAQMD
Analytical Lab	SMAQMD
Reporting Agency	CARB
Pollutant	PM10
Parameter code	81102
POC	1
Instrument manufacturer and model	Sierra Anderson 1200
Sampling Method	Hi Volume
Sampling method code	063
Analysis Method	Gravimetric
FRM/FEM/ARM/Other	FRM
Comparable to annual PM2.5 NAAQS?	N/A
Monitoring objective	NAAQS compar-ison, public info
Statement of Purpose	Measures representative concentrations
Monitor type	SLAMS
Site type	Population Exposure
Spatial scale	Neighborhood
Sampling Frequency	1 in 6 days
Sampling season	Year Round
Distance from supporting structure	2.0 m
Distance from obstructions on roof	N/A
Distance from obstruc-tions not on roof	N/A
Distance from trees	10 m
Distance to furnace or incinerator flue	N/A
Distance between collocated monitors	N/A
Unrestricted airflow >= 270 deg arc	Yes
Probe height (agl)	5.0 m
Probe material	N/A
Residence time	N/A
Changes in the next 18 months?	Yes
Frequency of flow rate verification	Monthly
Last two semi-annual flow rate audit	4/16/12, 10/23/12

B.9 Rancho Seco

This outlying site is the furthest away from urban area. It was established in 2008 as a seasonal PM2.5 special purpose monitoring site. The PM2.5 data collected during the months of November through March is used for the South Sacramento County Winter PM2.5 Study.

This study is extended due to poor data capture rate at the beginning of the study period.

Site Name	Rancho Seco
AQS Site No.	NA
Geographic Coordinates	38.343812°, -121.109977° (WGS84)
Location	Located at former Rancho Seco Nuclear Power Plant in rural area located 27 miles southeast of downtown Sacramento.
Address	No street address, Herald, CA 95638
County	Sacramento
Distance from roadway	Approximately 75 feet
Average Daily Traffic	500 Vehicles/Day (estimated)
Ground Cover	Vegetated
Representative Area (MSA)	Sacramento--Arden-Arcade--Roseville, CA

Site	Rancho Seco
Start Date	11/1/08
Collecting Agency	SMAQMD
Analytical Lab	N/A
Reporting Agency	N/A
Pollutant	PM2.5
Parameter code	88501
POC	N/A
Instrument manufacturer and model	Met One E-BAM
Sampling Method	Very sharp cut cyclone
Sampling method code	731
Analysis Method	Beta Attenuation
FRM/FEM/ARM/Other	Non-FEM
Comparable to annual PM2.5 NAAQS?	No
Monitoring objective	Public info, research
Statement of Purpose	Measures rural, background PM2.5 concentration
Monitor type	SPM
Site type	Upwind/ Background
Spatial scale	Neighborhood
Sampling Frequency	Continuous
Sampling season	November-February
Distance from supporting structure	N/A
Distance from obstructions on roof	N/A
Distance from obstruc-tions not on roof	N/A
Distance from trees	> 10 meters
Distance to furnace or incinerator flue	N/A
Distance between collocated monitors	N/A
Unrestricted airflow >= 270 deg arc	Yes
Probe height (agl)	2 m
Probe material	N/A
Residence time	N/A
Changes in the next 18 months?	No
Frequency of flow rate verification	N/A
Last two semi-annual flow rate audit	N/A

B.10 Sloughhouse

Located in a rural area 16.5 miles southeast of Downtown Sacramento, this site measures O_3, wind direction, wind speed, and $PM_{2.5}$.

Sloughhouse was established in 1997 as a seasonal (April-October) O_3 special purpose monitoring site to measure elevated afternoon O_3 concentrations, under northwesterly winds, in support of the District's summer Spare the Air (O_3 episodic control measure) program. It was sited to cover "data gaps" in the O_3 monitoring network, which is used for forecasting summer AQI levels.

A tree 10 m southeast of the O_3 inlet was removed in May 2011. Since the site now complies with Appendix E (Probe and Monitoring Path Siting Criteria), the O_3 monitor was re-classified from SPM to SLAMS.

Since November 2008, seasonal (November-February) monitoring for $PM_{2.5}$ is conducted at this site. A special purpose $PM_{2.5}$ E-BAM monitor collects data in support of the South Sacramento County Winter $PM_{2.5}$ study. This study has been extended, due to the extremely low data capture rates during the 2008 and 2009 winter seasons

Site Name	Sloughhouse
AQS Site No.	06-067-5003
Geographic Coordinates	38.494475°, -121.211131° (WGS84)
Location	Fire Station in rural area located 16.5 miles east-southeast of downtown Sacramento.
Address	7520 Sloughhouse Road, Sloughhouse, CA 95683
County	Sacramento
Distance from roadway	27 m
Average Daily Traffic	200 Vehicles/Day (Estimated)
Ground Cover	Vegetated
Representative Area (MSA)	Sacramento--Arden-Arcade--Roseville, CA

Site	Sloughhouse-Sloughhouse Rd.		
Start Date	7/1/97	7/1/97	7/1/97
Collecting Agency	SMAQMD	SMAQMD	SMAQMD
Analytical Lab	N/A	N/A	N/A
Reporting Agency	CARB	CARB	CARB
Pollutant	Ozone	Wind Direction	Wind Speed
Parameter code	44201	61104	61103
POC	1	1	1
Instrument manufacturer and model	TAPI 400E	Climatronics F-460	Climatronics F-460
Sampling Method	Instrumental	Instrumental	Instrumental
Sampling method code	087	020	020
Analysis Method	Ultra Violet Absorption	Vector Summation	Vector Summation
FRM/FEM/ARM/Other	FEM	Other	Other
Comparable to annual PM2.5 NAAQS?	N/A	N/A	N/A
Monitoring objective	NAAQS compar-ison, public info	Public info	Public info
Statement of Purpose	Measures elevated O3 concetration under northwesterly wind	Measures representative meteorology	Measures representative meteorology
Monitor type	SLAMS	SLAMS	SLAMS
Site type	Max O3 concentration	N/A	N/A
Spatial scale	Neighborhood	N/A	N/A
Sampling Frequency	Continuous	Continuous	Continuous
Sampling season	Year Round	Year Round	Year Round
Distance from supporting structure	1.8 m	2.4 m	2.4 m
Distance from obstructions on roof	N/A	N/A	N/A
Distance from obstruc-tions not on roof	6.0 m	6.0 m	6.0 m
Distance from trees	16 m	16 m	16 m
Distance to furnace or incinerator flue	N/A	N/A	N/A
Distance between collocated monitors	N/A	N/A	N/A
Unrestricted airflow >= 270 deg arc	Yes	Yes	Yes
Probe height (agl)	4.6 m	5.2 m	5.2 m
Probe material	FEP Teflon	N/A	N/A
Residence time	2 seconds	N/A	N/A
Changes in the next 18 months?	No	No	No
Frequency of one-point QC check	Daily	N/A	N/A
Last Annual Perfor-mance Evaluation	10/18/12	10/18/12	10/18/12

Site	Sloughhouse-Sloughhouse Rd.
Start Date	11/1/08
Collecting Agency	SMAQMD
Analytical Lab	N/A
Reporting Agency	N/A
Pollutant	PM2.5
Parameter code	88501
POC	N/A
Instrument manufacturer and model	Met One E-BAM
	Very sharp cut cyclone
Sampling method code	731
Analysis Method	Beta Attenuation
FRM/FEM/ARM/Other	Non-FEM
Comparable to annual PM2.5 NAAQS?	No
Monitoring objective	Public info, research
Statement of Purpose	Measures rural, background PM2.5 concentration
Monitor type	SPM
Site type	Upwind/ Background
Spatial scale	Neighborhood
Sampling Frequency	Continuous
Sampling season	November-February
Distance from supporting structure	N/A
Distance from obstructions on roof	N/A
Distance from obstruc-tions not on roof	N/A
Distance from trees	16 m
Distance to furnace or incinerator flue	N/A
Distance between collocated monitors	N/A
Unrestricted airflow >= 270 deg arc	Yes
Probe height (agl)	2 m
Probe material	N/A
Residence time	N/A
Changes in the next 18 months?	Yes
Frequency of flow rate verification	N/A
Last two semi-annual flow rate audit	N/A

B.11 Sacramento Health Dept-Stockton Blvd

According to old documentation, this PM monitoring site has been in existence since the late 1950s. This site measures PM-10 SSI, PM-10 TEOM, and PM-2.5 FRM.

Site Name	Sacramento Health Department-Stockton Blvd.
AQS Site No.	06-067-4001
Geographic Coordinates	38.556326°, -121.458499° (WGS84)
Location	Rooftop in urban area located 2 miles east-southeast of downtown Sacramento.
Address	2221 Stockton Blvd, Sacramento, CA 95817
County	Sacramento
Distance from roadway	46 m
Average Daily Traffic	28,090 Vehicles/Day (City of Sacramento, 2005)
Ground Cover	Rooftop (surrounding area is paved)
Representative Area (MSA)	Sacramento--Arden-Arcade--Roseville, CA

Site	Sacramento-Health Dept.		
Start Date	1/1/86	8/1/94	1/1/99
Collecting Agency	SMAQMD	SMAQMD	SMAQMD
Analytical Lab	SMAQMD	N/A	CARB
Reporting Agency	CARB	CARB	CARB
Pollutant	PM10	PM10	PM2.5
Parameter code	81102	85101	88101
POC	2	3	1
Instrument manufacturer and model	Sierra Anderson 1200	R & P 1400A	R & P 2025
Sampling Method	Hi Volume	Instrumental	Low volume with WINS
Sampling method code	063	079	118
Analysis Method	Gravimetric	Teom-Gravimetric	Gravimetric
FRM/FEM/ARM/Other	FRM	FEM	FRM
Comparable to annual PM2.5 NAAQS?	N/A	N/A	Yes
Monitoring objective	NAAQS comparison, public info	NAAQS comparison, public info	NAAQS comparison, public info
Statement of Purpose	Measures representative concentration in urban area	Measures representative concentration in urban area	Measures representative concentration in urban area
Monitor type	SLAMS	SLAMS	SLAMS
Site type	Population Exposure	Population Exposure	Highest concentration, population exposure
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Sampling Frequency	1 in 6 days	Continuous	1 in 3 days
Sampling season	Year Round	Year Round	Year Round
Distance from supporting structure	2.0 m	2.0 m	2.0 m
Distance from obstructions on roof	N/A	N/A	N/A
Distance from obstructions not on roof	N/A	N/A	N/A
Distance from trees	20 m	20 m	20 m
Distance to furnace or incinerator flue	N/A	N/A	N/A
Distance between collocated monitors	N/A	N/A	N/A
Unrestricted airflow >= 270 deg arc	Yes	Yes	Yes
Probe height (agl)	5.4 m	5.4 m	5.4 m
Probe material	N/A	N/A	N/A
Residence time	N/A	N/A	N/A
Changes in the next 18 months?	Yes	Yes	Yes
Frequency of flow rate verification	Monthly	Bi-Monthly	Monthly
Last two semi-annual flow rate audit	4/26/12, 10/11/12	3/8/11, 10/6/11	4/23/12, 10/11/12

B.12 Sacramento-1309 T Street

The Sacramento-1309 T Street site is operated by the California Air Resources Board/Monitoring and Laboratory Division/Special Purpose Monitoring Section. This site has been in existence since 1989.

This middle scale SLAMS air monitoring site measures O_3, NO_2, $PM_{2.5}$ FRM, Speciated $PM_{2.5}$, $PM_{2.5}$ BAM, PM_{10} SSI, WD, WS, TMP, RH, and Atmospheric Pressure.

Site Name	Sacramento-1309 T Street
AQS Site No.	06-067-0010
Geographic Coordinates	38.558333°, -121.491944 (NAD27)
Location	Residential area located in downtown Sacramento
Address	1309 T Street, Sacramento, CA 95814
County	Sacramento
Distance from roadway	30 m
Average Daily Traffic	3,102 Vehicles/Day (City of Sacramento, 2009)
Ground Cover	Rooftop site (residential area is paved)
Representative Area (MSA)	Sacramento--Arden-Arcade--Roseville, CA

Site	Sacramento-1309 T St.	
Start Date	4/1/89	4/1/89
Collecting Agency	CARB	CARB
Analytical Lab	N/A	N/A
Reporting Agency	CARB	CARB
Pollutant	Ozone	Nitrogen Dioxide
Parameter code	44201	42602
POC	1	1
Instrument manufacturer and model	TAPI 400E	TEI 42C
Sampling Method	Instrumental	Instrumental
Sampling method code	087	099
Analysis Method	Ultra Violet Absorption	Gas Phase Chemiluminescence
FRM/FEM/ARM/Other	FEM	FRM
Comparable to annual PM2.5 NAAQS?	N/A	N/A
Monitoring objective	NAAQS comparison, public info	NAAQS comparison, public info
Statement of Purpose	Measures representative concentration in urban area	Measures representative concentration in urban area
Monitor type	SLAMS	SLAMS
Site type	Population Exposure	Population Exposure
Spatial scale	Urban	Middle
Sampling Frequency	Continuous	Continuous
Sampling season	Year Round	Year Round
Distance from supporting structure	3.0 m	3.0 m
Distance from obstructions on roof	N/A	N/A
Distance from obstructions not on roof	N/A	N/A
Distance from trees	50 m	50 m
Distance to furnace or incinerator flue	N/A	N/A
Distance between collocated monitors	N/A	N/A
Unrestricted airflow >= 270 deg arc	Yes	Yes
Probe height (agl)	11.7	11.7
Probe material	FEP Teflon	FEP Teflon
Residence time	5.4 seconds	6 seconds
Changes in the next 18 months?	No	No
Frequency of one-point QC check	Daily	Daily
Last Annual Performance Evaluation	10/31/12	10/31/12

Site	Sacramento-1309 T St.			
Start Date	4/1/89	12/1/98	5/1/04	4/1/07
Collecting Agency	CARB	CARB	CARB	CARB
Analytical Lab	CARB	CARB	N/A	RTI
Reporting Agency	CARB	CARB	CARB	RTI
Pollutant	PM10	PM2.5	PM2.5	Speciated PM2.5
Parameter code	81102	88101	88501	68103
POC	1	1	3	5
Instrument manufacturer and model	Sierra Anderson 1200	R & P 2025	Met One 1020 BAM	Met One SASS
Sampling Method	Hi Volume	Low volume with WINS	Very sharp cut cyclone	SASS
Sampling method code	063	118	731	810, 811, 812
Analysis Method	Gravimetric	Gravimetric	Beta Attenuation	(multiple)
FRM/FEM/ARM/Other	FRM	FRM	Pre-FEM	Other
Comparable to annual PM2.5 NAAQS?	N/A	Yes	No	No
Monitoring objective	NAAQS comparison, public info	NAAQS comparison, public info	Public info	Research
Statement of Purpose	Measures representative concentration in urban area	Measures representative concentration in urban area	Measures representative concentration in urban area	Provide speciation data of urban emission
Monitor type	SLAMS	SLAMS	SLAMS	CSN
Site type	Population Exposure	Highest concentration, population exposure	Highest concentration, population exposure	Highest concentration, population exposure
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Sampling Frequency	1 in 6 days	1 in 3 days	Continuous	1 in 3 days
Sampling season	Year Round	Year Round	Year Round	Year Round
Distance from supporting structure	1.5 m	1.5 m	2.0 m	1.9 m
Distance from obstructions on roof	N/A	N/A	N/A	N/A
Distance from obstructions not on roof	N/A	N/A	N/A	N/A
Distance from trees	50 m	50 m	50 m	50 m
Distance to furnace or incinerator flue	N/A	N/A	N/A	N/A
Distance between collocated monitors	N/A	N/A	N/A	N/A
Unrestricted airflow >= 270 deg arc	Yes	Yes	Yes	Yes
Probe height (agl)	10 m	10 m	10 m	10 m
Probe material	N/A	N/A	N/A	N/A
Residence time	N/A	N/A	N/A	N/A
Changes in the next 18 months?	No	No	No	No
Frequency of flow rate verification	Monthly	Monthly	Bi-monthly	Monthly
Last two semi-annual flow rate audit	4/17/12, 10/31/12	4/17/12, 10/31/12	4/17/12, 10/31/12	N/A

Site	Sacramento-1309 T St.				
Start Date	2/1/92	2/1/92	2/1/92	2/1/92	2/1/92
Collecting Agency	CARB	CARB	CARB	CARB	CARB
Analytical Lab	N/A	N/A	N/A	N/A	N/A
Reporting Agency	CARB	CARB	CARB	CARB	CARB
Pollutant	Ambient Temperature	Relative Humidity	Barometric Pressure	Wind Direction	Wind Speed
Parameter code	62101	62201	64101	61102	61101
POC	1	1	1	1	1
Instrument manufacturer and model	Met-One 060A-2	Met-One 083D-0-6	Met-One 090D-26	Met-One 020-C	Met-One 010-C
Sampling Method	Instrumental	Instrumental	Instrumental	Instrumental	Instrumental
Sampling method code	040	061	014	066	066
Analysis Method	Machine average	Met One 083D	Barometric Sensor	Ultrasonic Anemometer	Ultrasonic Anemometer
FRM/FEM/ARM/Other	Other	Other	Other	Other	Other
Comparable to annual PM2.5 NAAQS?	N/A	N/A	N/A	N/A	N/A
Monitoring objective	Public info	Public info	Public info	Public info	Public info
Statement of Purpose	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Site type	N/A	N/A	N/A	N/A	N/A
Spatial scale	N/A	N/A	N/A	N/A	N/A
Sampling Frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Sampling season	Year Round	Year Round	Year Round	Year Round	Year Round
Distance from supporting structure	9.0 m	9.0 m	2.0 m	9.0 m	9.0 m
Distance from obstructions on roof	N/A	N/A	N/A	N/A	N/A
Distance from obstructions not on roof	N/A	N/A	N/A	N/A	N/A
Distance from trees	50 m	50 m	50 m	50 m	50 m
Distance to furnace or incinerator flue	N/A	N/A	N/A	N/A	N/A
Distance between collocated monitors	N/A	N/A	N/A	N/A	N/A
Unrestricted airflow >= 270 deg arc	Yes	Yes	Yes	Yes	Yes
Probe height (agl)	15 m	15 m	12 m	15 m	15 m
Probe material	N/A	N/A	N/A	N/A	N/A
Residence time	N/A	N/A	N/A	N/A	N/A
Changes in the next 18 months?	No	No	No	No	No
Frequency of one-point QC check	N/A	N/A	N/A	N/A	N/A
Last Annual Performance Evaluation	10/31/12	N/A	10/31/12	10/31/12	10/31/12

Appendix C Near-Road NO_2 Monitoring

Introduction

In 2010, U.S. EPA promulgated new nitrogen dioxide (NO_2) monitoring requirements. Local agencies are required to install and operate new near-road monitoring stations where hourly maximum NO_2 emissions are expected. Deployment deadline revised on March 7, 2013, (EPA Docket ID EPA-HQ-OAR-2012-0486) requires the first tier of near-road monitoring site, which includes the Sacramento—Arden-Arcade—Roseville CBSA, to be operational by January 1, 2014. The Sacramento CBSA is required to have one near-road NO_2 monitoring site according to the population and traffic criteria given in Appendix D to 40 CFR 58. The Sacramento CBSA has a population of 2.2 million (2010 U.S. Census count) and annual average daily traffic (AADT) count of 246,000 on the most travelled road (2011 Caltrans count). The District will install the near-road monitoring site and have it operational by January 1, 2014.

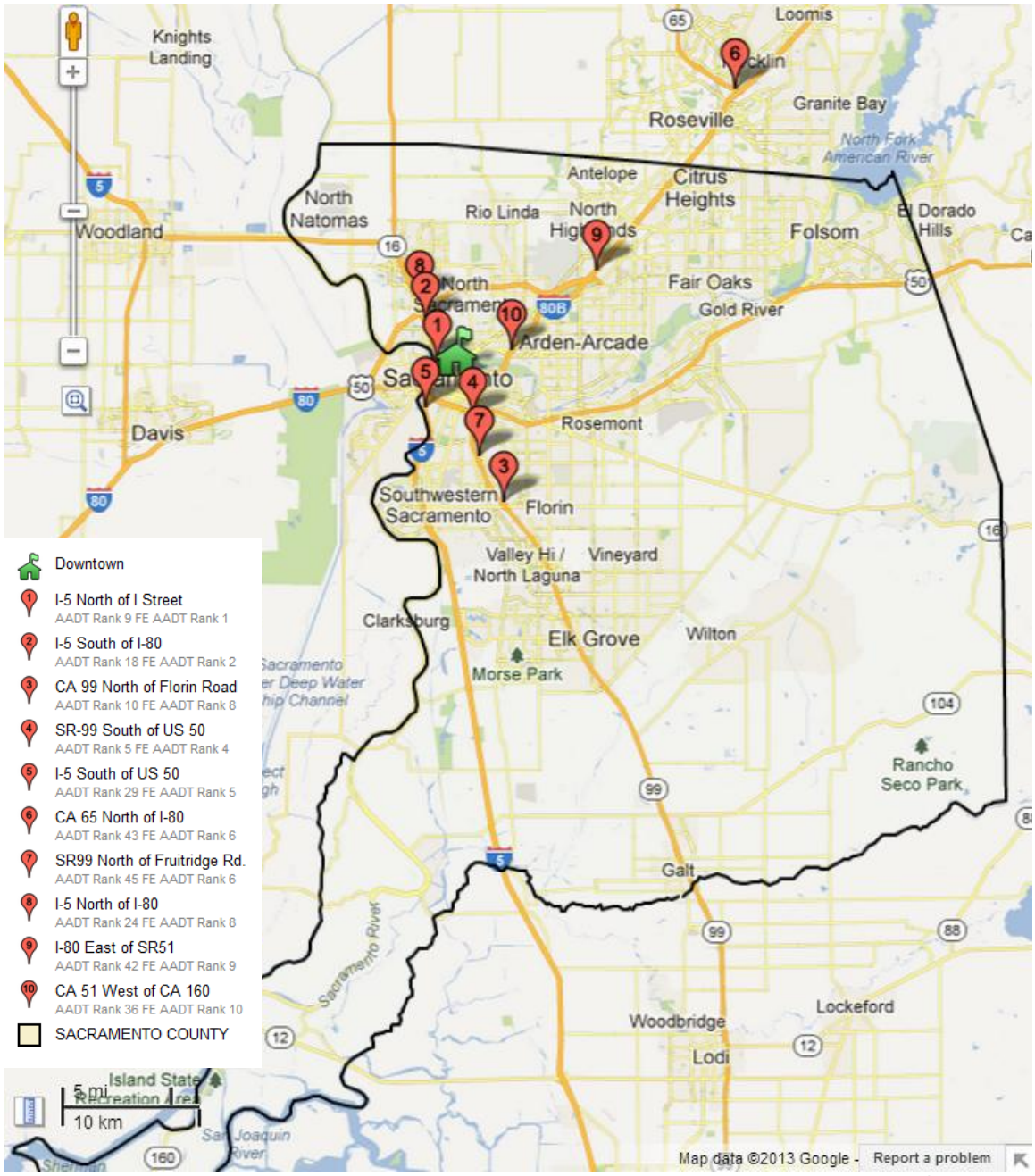
To determine the location with the maximum NO_2 emissions, the top ten sites with the highest number of cars and trucks traffic were identified, see Figure C-1. Each of these locations was reviewed according to the guidelines provided by U.S. EPA in the Near-Road NO_2 Technical Assistance Document (TAD). For example, annual average daily traffic (AADT), number of heavy duty trucks, site characteristics, and other logical issues are among the factors considered. The final site selection meets the probe and siting criteria provided in Appendix D and E to 40 CFR Part 58.

Location

Through a series of siting and guideline review, which are discussed in the following sections, the Districts determines that a site on Bercut Dr. in Sacramento (38.593328°N, -121.503728°W) is the best location to meet near-road NO_2 monitoring goals. Located less than one mile northeast of Downtown Sacramento, Bercut Dr. is nearly parallel to Interstate 5 (I-5) but is not a frontal road, as traffic from I-5 has no direct access to Bercut Dr. The closest major intersection to the potential site is Richards Blvd to the north, which has on and off ramps to I-5. This site does not have any distinguish feature that makes the site unique so that the pollution measured is representative to other near-road locations in the CBSA.

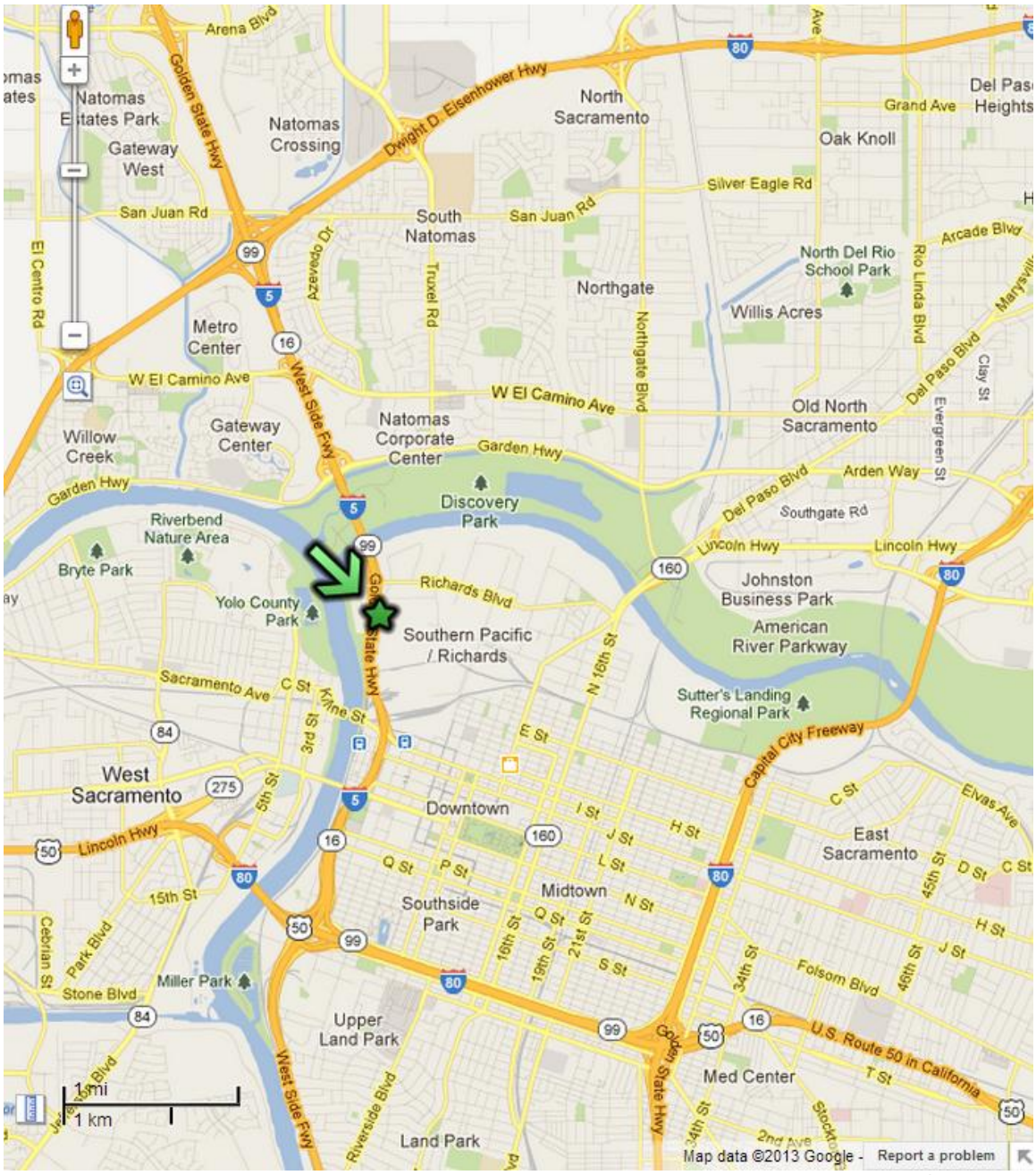
If this site is approved as a near-road monitoring site, the District would partner with California Department of Transportation (Caltrans) and utilize its building on Bercut Dr. to shelter monitoring equipment. Note that this site is 250 feet north of the old site that was presented in the 2012 Annual Network Plan. Figure C-2, C-3, C-4, and C-5 show location and ground view of the potential site.

Figure C-1
Map of Top Potential Near-Road Air Monitoring Sites



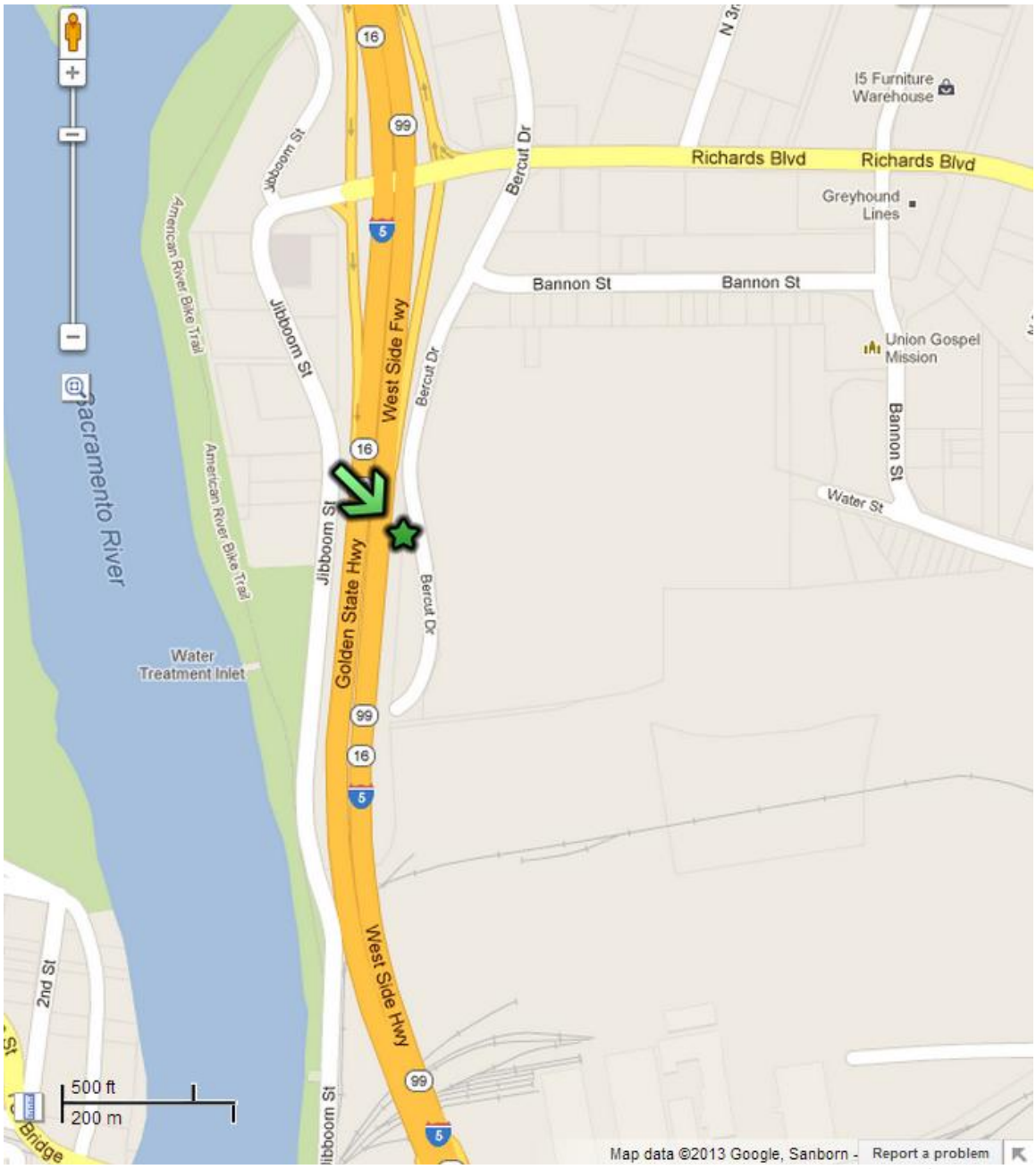
PARTIAL SCREENSHOT OF GOOGLE MAP

Figure C-2
Location of Bercut Dr.



PARTIAL SCREENSHOT OF GOOGLE MAP

Figure C-3
Location of Potential Site on Bercut Dr.



PARTIAL SCREENSHOT OF GOOGLE MAP

Figure C-4
Ground View of Potential Site, Looking toward WSW

Traffic Data

The site on Bercut Dr. would monitor NO_2 emissions from I-5. The 150 block of Bercut Dr. is located north of I Street on I-5 and south of Richards Blvd. I-5 is a major highway that runs parallel to the West Coast. In addition to linking with two regional highways, it also links with Interstate 80, a transcontinental highway. A map was shown in Figure C-1.

Although AADT at the Bercut Dr. site ranks #9 in the region, it ranks #1 in terms of fleet equivalent (FE) AADT. The 2011 latest statistics maintained by the Traffic Data Branch of Caltrans, AADT on this targeted roadway is 186,000, of which 18,000 is heavy duty truck traffic. FE AADT is a quantitative way to compare NO_2 emissions between roadways with different fleet mix. It is calculated with the heavy duty trucks vs. non-heavy duty vehicles emissions ratio. According to the EMission FACtors (EMFAC 2011) model developed by California Air Resource Board in 2011, heavy duty trucks and non-heavy duty vehicles produce 9.65 and 0.562 oz of NOx per vehicle per day, respectively, for scenario year 2010 in Sacramento County. The emission ratio is calculated and rounded to 17. At this ratio, the Bercut Dr. site is estimated to have 17% more NO_2 emissions than the next highest location. If the national default emission ratio, 10, is used to calculate the FE AADT, this site would still rank the highest in FE AADT, which is 16% more emissions than the next highest location.

Level of service (LOS) is another important factor considered. In the Transportation Corridor Concept Report (TCCR) prepared by Caltrans in 2010, LOS on Interstate 5 north of I Street is rated “F”, the most congested condition. In April 2012, Sacramento Council of Government, the regional transportation project coordinator, adopted future construction projects in its Metropolitan

Transportation Plan 2035. The plan includes the construction of two high occupancy vehicle lanes, one in each direction, north of I St. on Interstate 5 by 2035. Despite the additional lanes, the TCCR forecasts the LOS to remain at "F" for the next twenty years.

Table C-1 details the AADT, fleet equivalent AADT, its ranking, and level of service (LOS) of the top ranking sites in this CBSA. For brevity, only potential sites among the highest ranked AADT or FE AADT are listed. Table C-2 details the NOx model emission in Sacramento County for calculation of emission ratio.

Table C-1
AADT of Top Ranking Roadways in Sacramento CBSA

Route	Direction	Location	AADT	AADT Rank	Trucks	FE AADT (ER. = 10)	FE AADT Rank (ER. = 10)	FE AADT (ER. = 17)	FE AADT Rank (ER. = 17)	LOS
I-5	N. of	I St.	186K	9	18K	347K	1	475K	1	F
I-5	S. of	Jct. Rte. 80	159K	18	15K	296K	4	406K	2	F
SR99	N. of	Florin Rd.	179K	10	12K	283K	7	367K	3	F
SR99	S. of	Jct. Rtes. 50/51/5	212K	5	10K	298K	2	367K	4	F
I-5	S. of	Jct. Rte. 50	143K	29	14K	267K	12	365K	5	F
SR65	N. of	Jct. Rte. 80 (Placer Cnty)	104K	43	16K	245K	20	358K	6	D
SR99	N. of	Fruitridge Rd.	191K	8	10K	282K	8	354K	7	F
I-5	N. of	Jct. Rte. 80	152K	24	12K	263K	13	351K	8	E
I-80	E. of	Jct. Rte. 51	213K	4	8K	288K	6	347K	9	F
SR51	W. of	Jct. Rte. 160 West	117K	36	14K	245K	21	347K	10	F
SR-50	E. of	Jct. Rtes. 51/99	216K	3	8K	288K	5	346K	11	F
SR-50	E. of	65th St.	206K	6	8K	281K	9	341K	12	F
SR-50	E. of	Jct. Rte. 160 15th/16th St	246K	1	6K	297K	3	338K	13	F
SR-50	W. of	65th St.	200K	7	8K	275K	11	334K	14	F
I-80	E. of	Antelope Rd.	168K	15	10K	259K	16	332K	15	F
SR99	S. of	Fruitridge Rd.	172K	14	10K	260K	14	331K	16	F
I-80	W. of	West Jct. Rte. 50 (Yolo Cnty)	150K	26	11K	249K	18	329K	17	D
I-80	E. of	Greenback Ln.	179K	10	9K	260K	15	324K	18	F
SR-50	E. of	Jct. Rte. 5	226K	2	6K	280K	10	323K	19	F
SR99	N. of	Mack Rd.	161K	17	10K	248K	19	317K	20	F
I-5	N. of	Pocket/Meadowview Rds.	101K	45	13K	221K	31	317K	21	F
SR99	S. of	Stockton Blvd.	153K	23	10K	241K	23	312K	22	F
I-5	S. of	Jct. Rte. 99 North	108K	42	12K	220K	32	310K	23	E
SR-50	E. of	Jct. Rte. 16	179K	10	8K	250K	17	306K	24	F
I-80	E. of	Atlantic St. (Placer Cnty)	157K	21	9K	238K	24	303K	25	F
I-80	W. of	Riverside Dr. (Placer Cnty)	165K	16	9K	242K	22	303K	26	F
I-80	W. of	Richards Blvd. (Yolo Cnty)	125K	33	11K	224K	29	303K	27	D
SR99	N. of	Stockton Blvd.	130K	32	10K	223K	30	298K	28	F
I-80	W. of	Jct. Rte. 65 (Placer Cnty)	147K	27	9K	229K	28	294K	29	F

Table C-2
Model NO_x Emission for Sacramento County

EMFAC 2011
2010 Estimated Annual Emissions
EMFAC 2011 Vehicle Categories
Sacramento COUNTY, Sacramento Valley BASIN

	Veh[a]	Fuel	# of Vehicles	NOX_TOTEX (Tons/day)	Emission (oz/d/V)
	LDA	GAS&DSL	474,531	5.719	
	LDT1	GAS&DSL	67,074	1.535	
	LDT2	GAS&DSL	162,705	3.440	
	MDV	GAS&DSL	139,198	4.121	
	Total		**843,508**	**14.82**	**0.562**
Heavy Duty Vehicles	LHD1	GAS&DSL	39,537	5.683	
	LHD2	GAS&DSL	5,573	1.028	
	T6 Ag	DSL	740	0.3099	
	T6 CAIRP heavy	DSL	10	0.0060	
	T6 CAIRP small	DSL	32	0.0173	
	T6 instate construction heavy	DSL	245	0.1529	
	T6 instate construction small	DSL	596	0.3546	
	T6 instate heavy	DSL	1,759	1.090	
	T6 instate small	DSL	4,312	2.529	
	T6 OOS heavy	DSL	6	0.0034	
	T6 OOS small	DSL	18	0.0099	
	T6 Public	DSL	2,072	0.4451	
	T6 utility	DSL	110	0.0210	
	T6TS	GAS	3,023	0.4807	
	T7 Ag	DSL	327	0.4426	
	T7 CAIRP	DSL	449	1.504	
	T7 CAIRP construction	DSL	15	0.0518	
	T7 NNOOS	DSL	453	1.271	
	T7 NOOS	DSL	164	0.5506	
	T7 other port	DSL	8	0.0294	
	T7 POAK	DSL	18	0.0582	
	T7 POLA	DSL	0	0.0000	
	T7 Public	DSL	522	0.2976	
	T7 Single	DSL	339	0.4083	
	T7 single construction	DSL	121	0.1463	
	T7 SWCV	DSL	145	0.1345	
	T7 tractor	DSL	438	1.180	
	T7 tractor construction	DSL	91	0.1211	
	T7 utility	DSL	19	0.0093	
	T7IS	GAS	331	0.2007	
	Total		**61,475**	**18.53**	**9.65**

[a] Motorcycles, motorhomes, motor coaches, and buses are excluded from this calculation

Physical Considerations for the Selected Site

Bercut Dr. Site is selected partly for its site characteristics. According to the Near-Road NO_2 TAD, there are four components to physical site characteristics to consider: roadway design, roadside structure, terrain, and meteorology. Each of these components may have desirable or undesirable attributes that alter NO_2 concentration captured. The characteristics of Bercut Dr. Site are listed below.

- Roadway Design – Interstate 5, north of I St., is elevated and can be divided into two portions: bridge and solid fill. The Bercut Dr. site is located next to the elevated roadway with solid fill and is 250 m away from the bridge portion to avoid enhanced dispersion effect. Maximum NO_2 can be captured at this location for two reasons. First, the elevated roadway, approximately 5 m above surrounding ground level, with solid fill has a similar emissions profile as a flat roadway, which allows direct sampling. Also, the inlet probe will be placed slightly above roadway level, at 6 m, to minimize sample dispersion. At this height placement, the inlet probe also meets the Probe and Monitoring Path Siting Criteria as specified in 40 CFR Part 58.

- Roadside structure – This portion of Interstate 5 does not have obstructions (i.e., sound wall) that funnels NO_2 downwind and prevents the capture of the highest NO_2 concentration. The District is working with Caltrans to remove short vegetation along the roadway to minimize any adsorption or reaction effect on NO_2.

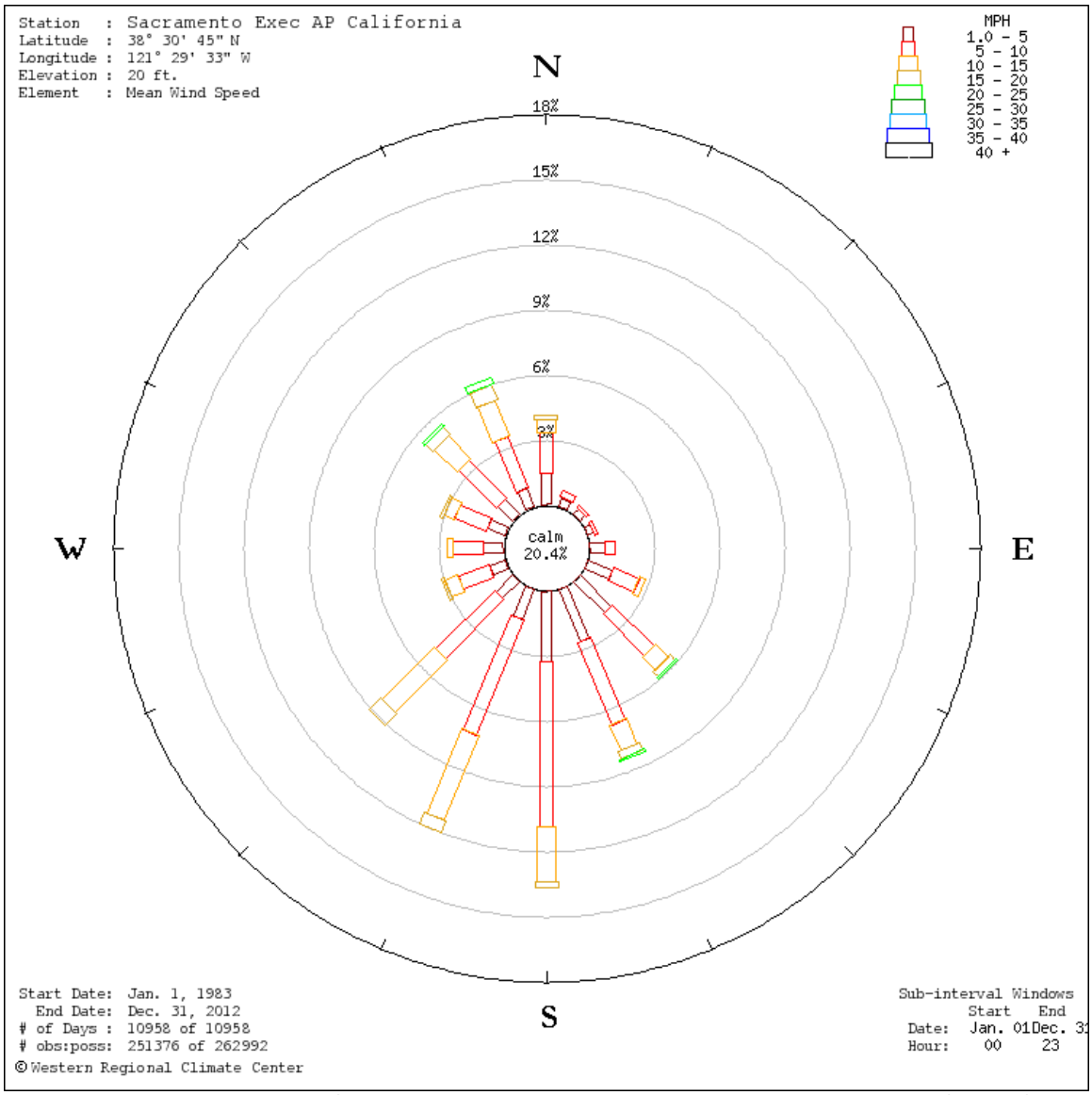
- Terrain – Sacramento is located in a flat valley. Terrain does not present a challenge.

- Meteorology – According to meteorological data observed at an airport five miles south of Bercut Dr., Sacramento Executive Airport, prevailing wind is at this location from the south-southwest. Hence, the station would be downwind of Interstate 5. Figure C-6 shows the wind rose compiled by Western Regional Climate Center using 30 years of measurement taken at the airport since 1983.

Bercut Dr. Site has no undesirable attributes that would potentially decrease the maximum NO_2 captured. Electric power and phone service are also readily accessible. The site can also be easily accessed by a site operator. The District is currently working with Caltrans to draft a lease agreement for the site.

The sampling inlet probe will be placed approximately 20 m from the closest highway lane. This is as close as practical due to the obstruction of the slope of the solid-fill, elevated roadway and a drainage canal that is parallel to the highway. The probe placement meets the recommendation provided in the Near-Road NO2 TAD as well as the Near-Road NO2 Siting Criteria in Appendix E to 40 CFR, Part 58. A complete matrix among the top ten FE AADT sites is provided in Table C-3 and C-4.

Figure C-5
Wind Rose Representative of Bercut Dr.



GRAPHICS PROVIDED THROUGH THE COURTESY OF WESTERN REGIONAL CLIMATE CENTER

Table C-3
Complete Matrix of Top Potential Near-Road Site (#1-5)

Site/Segment Parameters	Candidate #1	Candidate #2	Candidate #3	Candidate #4	Candidate #5
Location	Bercut Dr. 38.5926°, -121.5040°	Metro Center 38.6176°, -121.5137°	Southgate Commercial 38.4978°, -121.4484°	Curtis Park (38.5498°, -121.4737°)	Jedediah Smith School (38.5620°, -121.5140°)
Road segment name	Interstate 5	Interstate 5	State Route 99	State Route 99	Interstate 5
Road type	Controlled access highway				
Road segment end points	Richards Blvd. (38.5970°, -121.5039°) I St. (38.5848° -121.5029°)	Interstate 80 (38.6250°, -121.5171°) El Camino Ave. (38.6148°, -121.5123°)	47th Ave. (38.5104°, -121.4599°) Florin Rd. (38.4961°, -121.4460°)	State Route 50 (38.5588°, -121.4736°) 12th Ave. (38.5412°, -121.4738°)	State Route 50 (38.5684°, -121.5107°) Sutterville Rd. (38.5407°, -121.5108°)
AADT	186,000	159,000	179,000	212,000	143,000
HD counts	17,856	15,264	11,599	9,561	13,728
FE-AADT (HDm = 17.2)	475,267	406,277	366,904	366,888	365,394
Congestion information	F	F	F	F	F
Roadway design	Elevated roadway with solid fill (18ft, 1:3 slope)	Mostly at grade with surrounding	At grade with surrounding	Bridge, elevated roadway with solid fill, and depressed roadway	Elevated bridge, gradually becoming flat
Terrain	Flat, within valley	Flat, within valley	Flat, within valley	Flat, within valley	Flat, within valley
Meteorology	Prevailing southwest wind, location is downwind	Prevailing southwest wind; location is upwind	Prevailing southwest wind; location is upwind	Prevailing southwest wind	Prevailing southwest wind; location is downwind
Population exposure (# of residents and workers w/in 1,000ft radius)	Limited population exposure presently; medium density housing to be developed in next 5-10 years	Typical suburban single family homes and business park (200 residents and 1,200 workers)	Typical suburban single family homes, office, and retail businesses (380 residents and 150 workers)	Dense residential area just outside of downtown area and mix of small businesses (800 residents and 50 workers)	Moderately dense residential area just outside of downtown area with an elementary school (600 residents and 100 workers)
Safety features	None	None	None	None	Sound wall separation
Infrastructure	Overhead power line directly above	No utilities visible, 8ft sound wall on opposite side of highway	Overhead power line 50ft away, light pole 200ft away, 8ft sound wall on opposite side of highway	Sound wall on both side of highway would impact measurement; scattered light poles	No utilities visible, sound wall would impact measurement

Site/Segment Parameters	Candidate #1	Candidate #2	Candidate #3	Candidate #4	Candidate #5
Location	Bercut Dr. 38.5926°, -121.5040°	Metro Center 38.6176°, -121.5137°	Southgate Commercial 38.4978°, -121.4484°	Curtis Park (38.5498°, -121.4737°)	Jedediah Smith School (38.5620°, -121.5140°)
Interchanges	None	None	None	Interchange 0.25 mile due north	Interchange 0.5 mile due north
Surrounding land use	Mostly commercial (water treatment plant); very few residence; open area to be developed into museum, high density housing (10-12K units), and retail	Commercial (large business park) and suburban residential area	Small and big business, including big box retail, suburban residence	Mostly residential	Open water with marina and urban forest, medium density residential area; elementary school within 1000ft; wholesale gas dispensary 0.5 miles due north
Nearby NOx sources	Commercial source < 1 tpy, 0.6 miles downwind	No significant source within 2 miles radius	Industrial source and natural gas power plant 42 tpy total, 1.6 mi northwest (neither upwind or downwind)	Industrial source 3.5 tpy, 0.6 mi due south (upwind)	Commercial source 1.2 tpy, 1.1 mi downwind
Current road construction	None	None	None	None	None
Future road construction	Two additional HOV lanes, estimated completion: 2020	Two additional HOV lanes, estimated completion: 2020	No major construction anticipated for next 10 years	No major construction anticipated for next 10 years	Two additional HOV lanes, estimated completion: 2015
Frontage roads	None	None	None	None	None
Available space – site footprint	Large area available	Large area available	Some space available	Insufficient space available	Some space available
Property type	Government	Private	Private	Highway Right-of-Way	Elementary school
Property owner	City of Sacramento	Private	Private	Caltrans	City school district
Likelihood of access	Likely	Unknown	Chance	Very unlikely	Chance
Other details/local knowledge	Minimal rent may be feasible for this site making it an attractive option	Too many trees to cut down to meet siting criteria		Dangerous due to insufficient space available for safety barrier/buffer	The number of trees upwind of location is unique

Table C-3
Complete Matrix of Top Potential Near-Road Site (#6-10)

Site/Segment Parameters	Candidate #6	Candidate #7	Candidate #8	Candidate #9	Candidate #10
Location	Creekside (38.7748°, -121.2660°)	N. City Farms (38.5270°, -121.4679°)	Natomas Crossing (38.6303°, -121.5187°)	I-80 Split (38.6521°, -121.3691°)	Swanston Estates (38.6018°, -121.4379°)
Road segment name	State Route 65	State Route 99	Interstate 5	Interstate 80	State Route 51
Road type	Controlled access highway				
Road segment end points	Interstate 80 (38.7699°, -121.2487°) Galleria Blvd. (38.7774°, -121.2658°)	12th Ave. (38.5412°, -121.4738°) Fruitridge Rd. (38.5249°, -121.4676°)	Arena Blvd. (38.6430°, -121.5262°) Interstate 80 (38.6250°, -121.5171°)	Madison Ave. (38.6610°, -121.3600°) State Route 51 (38.6471°, 121.3755°)	State Route 160 (38.6021°, -121.4395°) Exposition Blvd. (38.5969°, -121.4436°)
AADT	104,000	191,000	152,000	213,000	117,000
HD counts	15,704	10,085	12,282	8,286	14,204
FE-AADT (HDm = 17.2)	358,405	354,377	350,968	347,233	347,105
Congestion information	D	F	E	F	F
Roadway design	Bridge and depressed roadway	At grade with surrounding	Bridge overpass, elevated roadway with solid fill becomes flat	At grade with surrounding	At grade with surrounding
Terrain	Flat, within valley	Flat, within valley	Flat, within valley	Flat, within valley	Flat, within valley
Meteorology	Prevailing southwest wind; location is downwind	Prevailing southwest wind; location is upwind	Prevailing southwest wind; location is downwind	Prevailing southwest wind, nearly parallel to roadway	Prevailing southwest wind, nearly parallel to roadway
Population exposure (# of residents and workers w/in 1,000ft radius)	Major retail center in the immediate vicinity with some residence nearby (600 workers)	Typical suburban single family homes, with mix of small businesses (650 residents, 50 workers)	Typical suburban single family homes, with unique land buffer that separate homes from highway (100 residents)	Typical suburban single family homes, with mix of small businesses (400 residents, 30 workers)	Retail center and warehouses in the immediate vicinity with some residence nearby (400 workers)
Safety features	None	None	None	None	Guard rail separates main line from exit lane
Infrastructure	Parking lot lights	On-ramp meter and lights 100 feet away; sound wall on both side of highway	Overhead power line and light pole 500 ft away	Light pole 50 ft away	Overhead power line 100 feet away;

Site/Segment Parameters	Candidate #6	Candidate #7	Candidate #8	Candidate #9	Candidate #10
Location	Creekside (38.7748°, -121.2660°)	N. City Farms (38.5270°, -121.4679°)	Natomas Crossing (38.6303°, -121.5187°)	I-80 Split (38.6521°, -121.3691°)	Swanston Estates (38.6018°, -121.4379°)
Interchanges	Interchange 0.6 mile due southeast	None	Interchange 0.25 mile due south	Interchange 0.4 mile due southwest	Interchange 0.25 mi due east
Surrounding land use	Commercial (shopping area)	Commercial/ Residential	Open area in the immediate vicinity; suburban residence nearby (approx 700ft from roadway)	Residential	Commercial (small business, warehouse, hotels), with a few residence
Nearby NOx sources	Hospital facilities 4tpy and 6 tpy, 0.6 mi SE and 1.9 mi SSE, respectively	Industrial source and natural gas power plant 42 tpy total, 1.25 mi due south (relatively upwind)	No significant source within 2 miles radius	No significant source within 2 miles radius	Commercial source < 0.6 tpy 1 mile due west (relatively upwind), industrial source 2 tpy 0.4 mi northwest (downwind)
Current road construction	None	None	None	None	None
Future road construction	Two additional HOV lanes, estimated completion: 2033	No major construction anticipated for next 10 years	Two additional HOV lanes, estimated completion: 2020	No major construction anticipated for next 10 years	No major construction anticipated for next 10 years
Frontage roads	None	None	None	None	Local access frontage road, not included in target road segment
Available space – site footprint	Limited space available	Limited space available	Large area available	Some space available	Some space available
Property type	Private	Highway Right-of-Way	Government	Highway Right-of-Way	Private
Property owner	Private	Caltrans	City of Sacramento	Caltrans	Private
Likelihood of access	Unlikely	Unlikely	Chance	Unlikely	Likely
Other details/local knowledge					

Population Exposure

As suggested by the TAD, Bercut Dr. Site was selected despite having limited population exposure to NO_2. The TAD states that population exposure should only be used if two identical sites existed. Current land use around Bercut Dr. is zoned primarily for commercial use. There is limited residence in the vicinity. However, within the next 3-5 years, City of Sacramento will develop 240 acres of land nearby to include medium density housing. Population exposure is considered, but this factor is relatively minor compared to the fleet equivalent AADT (FE AADT).

Conclusion

The Bercut Dr. site has the highest number of heavy duty truck traffic in the region that contributes to the highest FE-AADT and emissions compared to other near-road locations. Because of the site characteristic at Bercut Dr., it allows direct sampling of NO_2 emissions Therefore, this site is likely to measure the highest NO_2 concentration in Sacramento—Arden-Arcade-Roseville CBSA.

Appendix D Copy of Approval Letter to Close Sacramento-El Camino/Watt (AIRS Site #06-067-0007)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

September 9, 2011

Brigette Tollstrup, Manager
Program Coordinator Division
Sacramento Metropolitan Air Quality Management District
777 12th Street, 3rd Floor
Sacramento, CA 95814-1908

Dear Ms. Tollstrup,

We have reviewed your April 12, 2011 request to close the carbon monoxide (CO) micro-scale monitoring site at Sacramento-El Camino/Watt (AIRS Site No. 06-067-0007).

The CO monitor at El Camino/Watt has been operating since 1980. From 2000 to 2009 the CO monitor's highest eight-hour mean was 6.25 ppm (69% of the standard). A statistical analysis shows that there is a probability of less than 10 percent of exceeding 80 percent of the 9 ppm CO National Ambient Air Quality Standard (NAAQS) during the next three years. The CO monitor is not specifically required by an attainment or maintenance plan, and is not required in order for Sacramento Metropolitan Air Quality Management District (SMAQMD) to meet 40 CFR 58 Appendix D. Therefore, the site closure meets the criteria set forth in 40 CFR 58.14(c)(l) for monitor discontinuation at a state and local air monitoring station (SLAMS).

EPA approves termination of CO monitoring at Sacramento-El Camino/Watt. Please include these modifications in your next annual network plan. If you have any questions, please contact me at (415) 972-3851 or Katherine Hoag (Hoag.Katherine@epa.gov) at (415) 972-3970.

Sincerely,

/s/

Matthew Lakin
Manager, Air Quality Analysis Office

cc: John Ching, Sacramento Metropolitan AQMD
Aleta Kennard, Sacramento Metropolitan AQMD
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